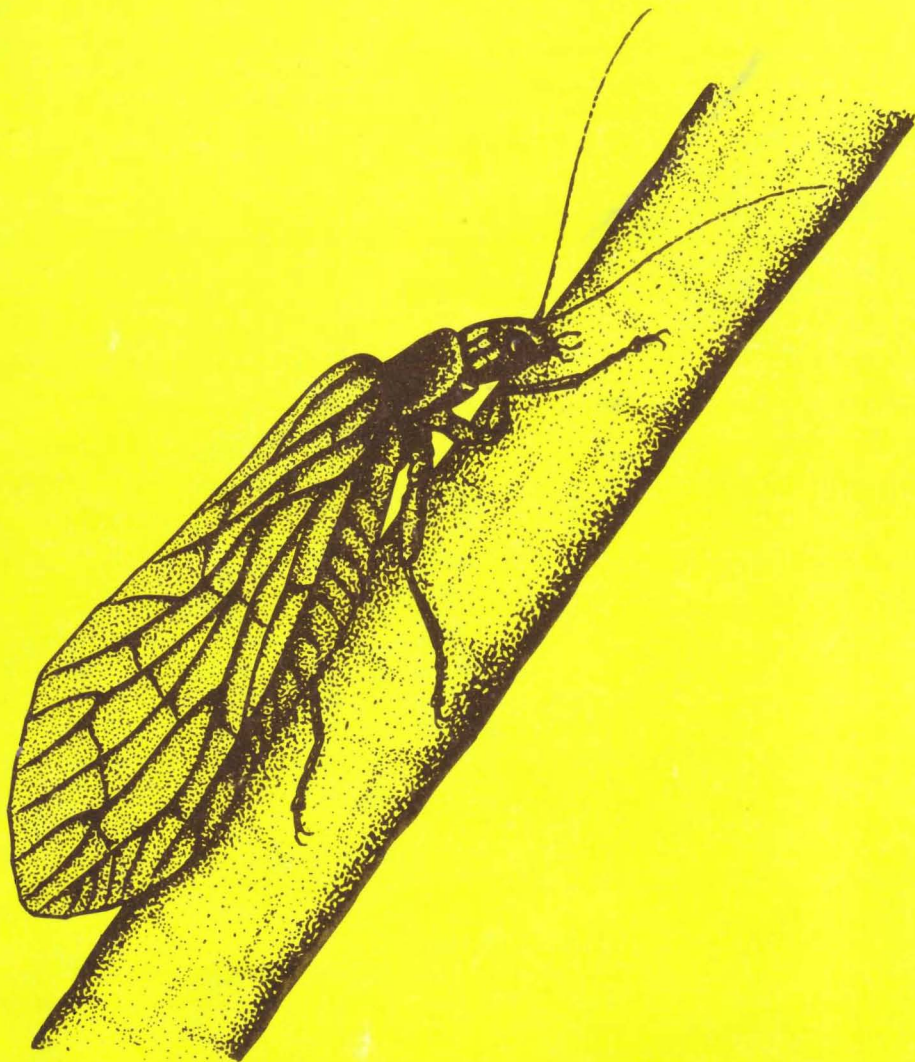


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Malaise trap collections of thrips from the islands Håøya and Ostøya in Oslofjorden, South Norway (Thysanoptera, Insecta)

Anders Johny Olsen & Fred Midtgaard

Olsen, A.J. & Midtgaard, F. 1996. Malaise trap collections of thrips from the islands Håøya and Ostøya in Oslofjorden, South Norway. (Thysanoptera, Insecta). - Fauna norv. Ser. B 43: 63-68.

During the summer of 1984 a total of 158 specimens of thrips (Thysanoptera), representing 31 species, were caught in malaise traps at five sampling localities on the two small islands of Håøya and Ostøya in Oslofjorden. The collections yielded 25 and 15 species from the two islands, respectively. The differences in species composition between islands and sampling localities are easily explained by differences in the vegetation. Five of the species collected by malaise traps, *Odontothrips intermedius* (Uzel), *Holothrips schaubergeri* Priesner, *Hoplandrothrips bidens* (Bagnall), *Hoplandrothrips williamsianus* Priesner and *Phlaeothrips coriaceus* Haliday are reported for the first time from Norway. A sixth species new to the Norwegian faunal list, *Haplothrips hukkineni* Priesner, was collected on Ostøya from the bulrush, *Scirpus lacustris* (L.) Palla .

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INTRODUCTION

Probably due to the minute size of these insects and the difficulties associated with their collection, preservation and identification, knowledge of the Norwegian thrips (Thysanoptera) fauna has been neglected for many years. Up to 1982, only 48 species of thrips had been reported from Norway, far below the true number of thrips species present in the country.

Olsen and Solem (1982) published a survey of the reported collections of thrips from Norway up to that date, together with notes on new records, bringing the total number of known species of thrips from Norway up to 88.

Two additional species have been added to the list since then (Olsen 1987, Selnes 1988), but the Norwegian thrips species list is most probably still far from complete. Also, the distribution as well as the phenology of most species remain unknown.

In the present paper, we present data of the thrips species found in two localities in Oslofjorden. All the specimens are mounted on slides in Canada balsam. The collections have been deposited at the University of Trondheim, Museum of Natural History and Archaeology, Department of Zoology, and at the Forschungsinstitut und Naturmuseum Senckenberg, in Frankfurt, Germany.

The nomenclature follows Mound et al. (1976), or Schliephake and Klimt (1979), with a few exceptions. These apply to *Neohydatothrips gracilicornis* (Williams) (by the cited authors placed in *Sericothrips* Haliday), *Hoplandrothrips* Hood that is now regarded as a valid genus, and *Holothrips* Karny now regarded as an earlier synonym for *Abiastothrips* Priesner. Plant names are in accordance with Lid and Tande Lid (1994).

COLLECTION SITES AND COLLECTION METHODS

During the summers of 1983 and 1984, insects were collected on the small islands of Ostøya and Håøya in the Oslofjorden, using Malaise traps. The main objective was to record the local fauna of Hymenoptera Symphyta, but other groups were also collected. The thrips specimens were sorted out of the samples collected in 1984.

Besides the Malaise trap collections, eleven specimens of *Haplothrips hukkineni* Priesner were collected from the bulrush, *Scirpus lacustris* (L.) Palla, on Ostøya on 31 May 1984.

Three collection sites (A, B and C) were selected on Ostøya and two on Håøya (A and B).

The climate of the area is slightly continental, with a long warm summer. For details about geographic positions, climate and vegetation, see Greve & Midtgaard (1986).

Malaise traps are not ideally suited for collecting thrips, because they may penetrate the cloth through the fibre meshes, or they may cling to any moisture drops. Also, only winged specimens will ordinarily be trapped. Hence, additional methods must be used if a complete inventory of the thrips fauna is the objective. Nevertheless, a species list and data on flight periods are obtained.

THE MALAISE TRAP COLLECTIONS

A total of 158 specimens was collected from the five sampling sites. Thirty-one species were represented. The number and distribution of the species varied from place to place. On Ostøya, the number of species collected from sites A and B was 14 and 15 respectively, but only 6 species were common to the two sites. At site C six species were recorded, of which only two were absent from the site A and B samples. Altogether, 25 species were recorded from Ostøya.

A total of 15 species was found on Håøya, 13 at site A, 9 at site B. Seven species were common to the two sites.

The differences in species composition between the islands and sampling sites are probably associated with differences in the vegetation. Site A on Ostøya was situated in a meadow, which accounts for the high number of species of thrips that live on grass and herbage, including *Aeolothrips ericae* Bagnall, *Aeolothrips intermedius* Bagnall, *Frankliniella intonsa* (Trybom) and *Thrips atratus* Haliday. A pine tree (*Pinus silvestris* L.) situated not so far away from the trap explains the record of *Aeolothrips vittatus* L. *Aeolothrips melaleucus* Haliday and *A. versicolor* Uzel probably originated from ash trees (*Fraxinus excelsior* L.) growing nearby. The remaining four tubuliferous thrips, *Holothrips schaubegeri* (Priesner), *Xylaplothrips fuliginosus* (Schille), *Hoplothrips corticis* (de Geer) and *Hoplothrips ulmi* (Fabricius) usually live on dead branches, or under the bark of decaying wood.

Site B was situated in the meadow, near a deciduous forest dominated by elm, *Ulmus glabra* Hudson and lime, *Tilia cordata* Miller, which explains the collections of the tree dwelling thrips *A. melaleucus*, *A. versicolor* and *Dendrothrips degeeri* Uzel. *Phlaeothrips annulipes* Reuter and *Hoplandrothrips bidens* (Bagnall) are both associated with decaying wood. The majority of the other species live on herbage or grass and may be found in both the ground-flora and shrub layer of mixed deciduous woodland.

Site C was located in a wet forest dominated by black alder, *Alnus glutinosa* (L.) Gaertner. The low species diversity shows that the site is a poor place for most thrips to live in. However, two species which were not present in the samples from sites A and B were found at this location, one of which, *Mycterothrips salicis* Reuter, lives on leaves of willow (*Salix*) species according to Mound et al. 1986. *Hoplandrothrips williamsianus* Priesner has been recorded from dry twigs, especially of *Salix* (Schliephake and Klimt, 1979).

At Håøya, both sites A and B were situated in a mature deciduous forest, with lime, *T. cordata*, elm, *U. glabra* and oak, *Quercus robur* L. as the dominant trees. Site A was situated near to an old oak and to an old or dying, aspen, *Populus tremula* L. Site B was close to an old, dead oak and to some pine trees (*P. silvestris*). The presence of dead or decaying wood probably explains the presence of *H. ulmi* and *Phlaeothrips*

coriaceus Haliday. In addition, both *M. salicis* and *D. degeeri* were present at both sites, as was *Thrips minutissimus* L., which probably lives on oak *Q. robur* (Mound et al. 1976). Also Haplothrips subtilissimus (Haliday) is associated with deciduous trees, including oak. The remaining species are all common on grass or herbage.

On Ostøya, no record of thrips was made before the period 12-30 May. On Håøya the first record was made during the period 5-19 May. Some species were collected during the whole summer (e.g. *Thrips physapus* L.), whilst other were collected only once (Table 1). However, the low total number of specimens collected does not allow safe conclusions to be reached regarding the activity patterns of the species.

NEW SPECIES RECORDS FOR NORWAY

Six of the species found are recorded for the first time in Norway, viz. *Odontothrips intermedius* (Uzel), *Haplothrips hukkineni*, *Holothrips schaubergeri* (Figure 1), *Hoplandrothrips bidens*, *Hoplandrothrips williamsianus* and *Phlaeothrips coriaceus*. All these six species are distributed throughout Europe, *P. cori-*

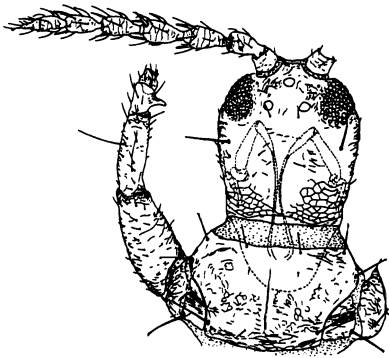


Figure 1

Head, antennae, pronotum and left fore leg of a female *Holothrips schaubergeri* (Priesner). Dorsal view (original drawing).

aceus also in North America (Schliephake and Klimt 1979). *O. intermedius*, *H. hukkineni*, *H. williamsianus* and *P. coriaceus* have been reported previously from Sweden (Ahlberg 1925, Oettingen 1954). *H. schaubergeri* and *H. bidens* are new to the Scandinavian fauna.

ACKNOWLEDGEMENT

The authors would like to thank Dr. Richard zur Strassen of the Forschungsinstitut und Naturmuseum Senckenberg (Germany) for checking the determinations of the species new to the Norwegian faunal list, one of which he corrected. He also made valuable comments on the manuscript. We would also like to thank P.A.Tallentire, England, for improving the English.

SAMMENDRAG

Trips (Thysanoptera) fra øyene Håøya og Ostøya i Oslofjorden

I løpet av sommeren 1984 ble det foretatt regelmessig innsamling av trips (Thysanoptera) ved hjelp av malaise-feller på tilsammen 5 lokaliteter på de to øyene Håøya og Ostøya i Oslofjorden. Innsamlingene pågikk fra 14 mai til 23 september, og totalt ble det tatt 158 individer fordelt på 31 arter. Artsantall og artsfordeling varierte tildels betydelig fra lokalitet til lokalitet, men på bakgrunn av artenes vertskrav kan disse variasjonene i stor grad forklares ut fra forskjeller i vegetasjon på de ulike lokalitetene.

Materialet danner et godt utgangspunkt for en artsliste for de to øyene, men malaise-feller har flere svakheter som fangstredskap for trips. Fellene er vanligvis så grovmasket at dyrene kan krype gjennom stoffet, og små individer blir fort hengende igjen i vannråper og fukt. I tillegg vil det i hovedsak bare være vingede trips som fanges. Det er derfor rimelig å anta at artsinventaret av trips på de to øyene er betydelig høyere enn det som fremkommer gjennom denne undersøkelsen.

Materialet gir indikasjoner om flytid/aktivitetsperioder for artene, men det relativt lave antallet individer som ble fanget gjør det vanskelig å kvantifisere dette.

Table 1. Thrips species collected on Ostøya at different times of year (1984) at site A, B and C, respectively. No. of species expressed as ♂/♀.

Site	Thrips species	Collection periods								
		14-28iv	28iv-12v	12-30v	30v-10vi	10vi-1vii	1-24vii	24vii-12viii	12vii-1ix	1-23ix
A	<i>Aeoloth. ericae</i> Bagnall				0/2		0/1	0/1		
	<i>Aeoloth. intermedius</i> Bagnall				0/2					
	<i>Aeoloth. melaleucus</i> Haliday			0/1			0/1			
	<i>Aeoloth. versicolor</i> Uzel				0/1					
	<i>Aeoloth. vittatus</i> L.				0/1					
	<i>Frankliniella intonsa</i> (Trybom)			0/2	0/2	0/1				0/1
	<i>Taenioth. inconsequens</i> (Uzel)			0/3						
	<i>Thrips atratus</i> Haliday			0/4	0/4					
	<i>Thrips fuscipennis</i> Haliday							0/1		
	<i>Thrips physapus</i> L.			0/2	0/2	0/1	0/1	0/1		0/1
	<i>Holothrips schaubergeri</i> (Priesner)				0/1		1/0	0/1		
	<i>Xylaploth. fuliginosus</i> (Schille)				1/1	0/1		0/1		
	<i>Hoploth. corticis</i> (de Geer)						0/1			
	<i>Hoploth. ulmi</i> (Fabricius)					0/1		0/2	0/3	
B	<i>Aeoloth. melaleucus</i> Haliday			0/2	0/4	0/1				
	<i>Aeoloth. versicolor</i> Uzel							0/1		
	<i>Dendroth. degeeri</i> Uzel						0/3			
	<i>Neohydatoth. gracilicornis</i> (Williams)						0/3	0/1	0/1	
	<i>Chiroth. manicatus</i> (Haliday)			0/1						
	<i>Oxyth. ajugae</i> Uzel						0/1			
	<i>Oxyth. bicolor</i> (Reuter)			0/1						
	<i>Frankliniella intonsa</i> (Trybom)			0/3						
	<i>Odontoth. intermedius</i> (Uzel)			0/1						
	<i>Taenioth. inconsequens</i> (Uzel)			0/9						
	<i>Taenioth. picipes</i> (Zetterstedt)						0/1			
	<i>Thrips atratus</i> Haliday			0/1			0/5			
	<i>Thrips physapus</i> L.						0/1			
	<i>Phlaeoth. annulipes</i> Reuter						0/1			
<i>Hoplandroth. bidens</i> (Bagnall)						0/1				
C	<i>Aeoloth. versicolor</i> Uzel						0/1			
	<i>Mycteroth. salicis</i> Reuter						1/4			
	<i>Thrips physapus</i> L.				0/1					0/1
	<i>Hoploth. ulmi</i> (Fabricius)							0/2		0/1
	<i>Hoplandroth. bidens</i> (Bagnall)			0/1						
	<i>Hoplandroth. williamsianus</i> Priesner							1/0		

Table 2. Thrips species collected on Håøya at different times of year (1984) at site A and B, respectively. No. of specimens expressed as ♂/♀.

Site	Thrips species	Collection periods							
		19iv-5v	5-19v	19v-3vi	3-16vi	16-27vi	27vi-22vii	22vii-18viii	18viii-16ix
A	<i>Dendroth. degeeri</i> Uzel		0/1						0/3
	<i>Aptinoth. elegans</i> Priesner			0/1					
	<i>Frankliniella intonsa</i> (Trybom)			0/2					
	<i>Mycteroth. salicis</i> Reuter					0/1	0/1		
	<i>Taenioth. inconsequens</i> (Uzel)			0/6					
	<i>Taenioth. picipes</i> (Zetterstedt)					0/1	0/1		
	<i>Thrips atratus</i> Haliday			0/1					
	<i>Thrips major</i> Uzel								0/1
	<i>Thrips minutissimus</i> L.		0/1						
	<i>Haploth. niger</i> (Osborn)				0/1				
	<i>Haploth. subtilissimus</i> (Haliday)						1/0		
	<i>Hoploth. ulmi</i> (Fabricius)					0/1			
	<i>Phlaeoth. coriaceus</i> Haliday			0/2	1/1		1/0		
B	<i>Aeoloth. ericae</i> Bagnall					0/1			
	<i>Dendroth. degeeri</i> Uzel						0/1		
	<i>Frankliniella intonsa</i> (Trybom)			0/6					
	<i>Mycteroth. salicis</i> Reuter						0/1	0/1	
	<i>Taenioth. inconsequens</i> (Uzel)							0/1	
	<i>Thrips atratus</i> Haliday			0/5			0/1		
	<i>Thrips minutissimus</i> L.		2/1	0/1					
	<i>Thrips physapus</i> L.			0/1					
	<i>Phlaeoth. coriaceus</i> Haliday			1/1			0/1		

Seks av artene rapporteres for første gang fra Norge. Fem av disse ble tatt med malaise-felle. Disse er *Odonthrips intermedius* (Uzel), *Holothrips schaubegeri* Priesner, *Hoplandrothrips bidens* (Bagnall), *Hoplandrothrips williamsianus* Priesner og *Phlaeothrips coriaceus* Haliday. En sjettede art, *Haplothrips hukkineni* Priesner, ble samlet fra *Scirpus lacustris* (L.) Palla på Ostøya. Artene er vidt utbredt i Europa, når det gjelder *P. coriaceus* også i Nord-America. *H. schaubegeri* og *H. bidens* er ny for skandinavisk fauna.

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Mites collected in Heimefrontfjella and Vestfjella (Dronning Maud Land, Antarctica)

Göran Thor

Thor, G. 1996. Mites collected in Heimefrontfjella and Vestfjella (Dronning Maud Land, Antarctica). - Fauna norv. Ser. B 43: 69-73.

During a biological investigation of some nunataks in the mountain ridges Heimefrontfjella and Vestfjella in western Dronning Maud Land, Antarctica, the austral summer 1991/92, three mites were collected. Localities for the species, *Eupodes tottanfjella* Strandtmann, *Nanorchestes bifurcatus* Strandtmann and *Tydeus erebus* Strandtmann, and notes on their habitat are given. All three species are reported as new to Sivorgfjella in Heimefrontfjella and *Tydeus erebus* also as new to the nunatak Basen in Vestfjella. A short description of Heimefrontfjella and Vestfjella as well as a summary of earlier publications on mites from Dronning Maud Land is also provided.

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INTRODUCTION

During the SWEDARP (Swedish Antarctic Research Programme) expedition in the austral summer of 1991/92, the author made biological investigations in Heimefrontfjella and Vestfjella in western Dronning Maud Land, Antarctica, with special emphasis on the lichens. The shelf ice were reached from Montevideo, Uruguay by the Russian ship M/S Akademik Fedorov. The Swedish main station Wasa was arrived on 30 November 1991, and departed on 20 February 1992. The aim of the biological investigation was to serve as base for a management plan. In this paper, the results from the inventory of mites are presented. A short description of Heimefrontfjella and Vestfjella as well as an summary of earlier publications on mites from Dronning Maud Land is also provided.

MATERIAL AND METHODS

The study is based on field work and collections by the author. The collections of mites are deposited at the

Swedish Museum of Natural History in Stockholm (S). The mites were separated from mosses and lichens at Wasa and Svea with a pin under a stereo-microscope and conserved in 70 % ethanol until determined. The length measurements of mites are based on living specimens.

The localities where biological collections (and water samples) were made during the 1991/92 expedition have been assigned a fixed number. Here are only the two relevant localities given. One locality was visited twice and both dates of the visits are given. Locality 34: Heimefrontfjella, Sivorgfjella, slopes of the small nunatak Steinnabben (500 m x up to 250 m), alt. 1 200-1 300 m, 74°33'S, 11°15'W, 4 January 1992 and 31 January 1992 (mites only collected 4 January); locality 72: Vestfjella, the nunatak Basen, 1 700 m NNW of the Swedish station Wasa (73°02'34''S, 13°24'50''W), steep slope towards W 25-50 m SE of the precipice, alt. 500 m, 9 February 1992.

GEOGRAPHICAL NAMES AND ALTITUDES

Geographical names for Vestfjella are in accordance with maps from Norsk Polarinstitutt 1972 (sheet C7, Vestfjella Aust and sheet B7, Vestfjella Vest) except the unnamed nunatak 500 m west of the northern part of the nunatak Fossilryggen which is here called the NW nunatak following Larsson (1991). The altitude for the nunatak Basen is in accordance with the map from the Swedish Polar Research Secretariat 1991 on which the altitudes are marked with an accuracy of 5 meter. Geographical names and altitudes for Heimefrontfjella are in accordance with the map from Norsk Polarinstitutt 1988 (sheet D8, Heimefrontfjella Nord).

STUDY AREA

Parts of the two mountain ridges Vestfjella and Heimefrontfjella in western Dronning Maud Land were visited. Both Vestfjella and Heimefrontfjella are parallel with the coast. Vestfjella is a 135 km long mountain ridge of nunataks 120 km from the coast. The highest peak is c. 1 100 m. Heimefrontfjella is a 135 km long mountain ridge of nunataks 300 km from the coast. The highest peak is c. 2 500 m. Heimefrontfjella is the last mountain ridge above the ice between the coast and the South Pole. The distance from Heimefrontfjella to the South Pole is 1 700 km.

The following nunataks were investigated for mites in Vestfjella: Basen with the Swedish main station Wasa and the Finnish station Aboa, Fossilryggen with the small Swedish field station Gunnar Hoppe, the NW nunatak, and the three small nunataks at the northernmost end of Fossilryggen.

In Heimefrontfjella the following nunataks were investigated for mites: the rock with the Swedish field station Svea (alt. 1 245 m, 74°34'36''S, 11°13'24''W) and the four small bedrock hills and the moraine hill south of Svea at the northernmost part of the nunatak Haldorsentoppen. The distance from the station Svea to the end of the south slope of the fourth hill is c. 1 km. Short visits were made to the nunataks Steinnabben (6 hr) and three of the highest peaks in Heimefrontfjella, with altitudes between 1 757-2 500 m, viz.

the tops of Wrighthamaren, Engenhovet and Paalnibba (c. 1 hour was spent on each top).

CLIMATE, GEOLOGY AND TOPOGRAPHY

The climate is continental, following the definition by Lewis Smith (1984) and extreme with low temperatures throughout the year. There are no published long-term climate data.

Basen, the northernmost nunatak in Vestfjella differs from the rest of Vestfjella in having a flat top plateau. The other larger nunataks have peaks with steep slopes. Basen extends over an area of 3 000 m x 20-1 500 m. The bedrock at Basen is basalt and diabase with dolerite dikes. The bedrock is partly covered by a thin layer of Pleistocene glacial till of mainly basalt.

The four massifs of the Heimefrontfjella Escarpment, Milorgfjella (Kottasberge), XU-fjella, Sivorgfjella and Tottanfjella (from north to south) are each separated by outlet glaciers from the Amundsenisen plateau (alt. 2 500-3 000 m) down to the Ritscherflya (alt. c. 1 200 m near Heimefrontfjella). The present investigation is restricted to some nunataks in Sivorgfjella. The bedrock is mainly weakly metamorphic red granite and grey augengneiss. Weathered augengneiss and granite form coarse gravel and sand which covers most of the bedrock at all nunataks. Steinnabben is c. 500 m x up to 250 m and has its highest peak in the southeast with steep slopes here which become gentle to the north-western end. Steinnabben is almost completely surrounded by a windscoop except at the northwest end.

EARLIER STUDIES OF MITES IN DRONNING MAUD LAND

Based on earlier publications a total of one oribatid (*Maudheimia wilsoni*) and ten prostigmatid mites have so far been observed in Dronning Maud Land (Sømme 1986, Ohyama & Hiruta 1995). Except for studies on prostigmatid mites from Vestfjella (Sømme 1978), studies on *Maudheimia wilsoni* (Sømme et al. 1993), and discussions on ecophysiological adaptations in mites (Strømme 1990), little information is available on the

ecology of the mites of Dronning Maud Land. The first mite reported from Dronning Maud Land was *Maudheimia wilsoni* Dalenius (Dalenius & Wilson 1958). *M. wilsoni* is still only reported from western Dronning Maud land (Sømme 1986, Ryan & Watkins 1989, Ryan et al. 1989). The dry underside of medium sized pieces of rocks near mosses and lichens was sometimes searched for *M. wilsoni* during the 1991/92 expedition, but without success. *M. wilsoni* often occur in this habitat at other nunataks in Dronning Maud Land (e.g. Dalenius & Wilson 1958, Ryan & Watkins 1989). Ryan & Watkins (1989) report a significant correlation between *M. wilsoni* and large amounts of the fruticose lichens *Usnea* spp. However, the genus *Usnea* is rare at the investigated nunataks (Thor, unpubl.) which might indicate that also *M. wilsoni* is rare or absent. Mites have been reported and discussed from outside Heimefrontfjella and Vestfjella in Dronning Maud Land from H.U. Sverdrupfjella (Winsnes 1972, Strandtmann & Sømme 1977), Gjelsvikfjella and Muhlig-Hofmannfjella (Sømme 1986), Robertskollen (Ryan et al. 1989), Sør Rondane Mountains (Ohyama & Hiruta 1995), and the Syowa station area (Matsuda 1977, Ohyama 1977, 1979, 1984, Ohyama & Matsuda 1977, Ohyama & Sugawara 1989).

The presence of mites in Heimefrontfjella was first reported by Bowra et al. (1966), who collected *Eupodes tottanfjella*, *Nanorchestes bifurcatus* and *Tydeus erebus* from Tottanfjella. *E. tottanfjella* and *N. bifurcatus* were described by Strandtmann (1967). Some mites are reported to have been collected in Heimefrontfjella but not determined (Stroeven & Pohjola 1991).

The presence of mites in Vestfjella was first reported by Sømme (1978) who collected five prostigmatid mites from south and central Vestfjella. Some nunataks where mites were collected are mentioned and three species are named, *E. tottanfjella*, *N. bifurcatus* and *N. brekkerista* Strandtmann & Sømme. Sømme (1980), report six prostigmatid mites from south, central and north Vestfjella, *E. tottanfjella*, *N. bifurcatus*, *N. brekkerista*, *Protoreunetes maudae* Strandtmann, *T. erebus* and *T. setsukoae* Strandtmann. One of these, *E. tottanfjella*, was reported from Basen. Fossilryggen was not visited.

RESULTS FROM THE PRESENT STUDY

Three mites were collected, *Eupodes tottanfjella*, *Nanorchestes bifurcatus* and *Tydeus erebus*. A more concentrated search for mites would probably result in the finding of more species and/or finding of the here presented species at more of the investigated nunataks. Mites were almost only observed in moss cushions, on lichens and among the green alga *Prasiola crispa*, and were most frequent near Snow Petrel (*Pagodroma nivea*) nests. Mites were in the field observed most abundant within a Snow Petrel colony at the gentle slope of the northwestern end of Steinnabben.

E. tottanfjella is about 0.5 mm long, bluish black, have a central dorsal whitish stripe and contrasting red legs. The body and legs have scattered about 0.1 mm long hairs. This species has longer legs than the two other and moves more rapidly. It is only reported from Heimefrontfjella (Bowra et al. 1966, Strandtmann 1967), and Vestfjella (Sømme 1980) and is here reported as new to Sivorgfjella in Heimefrontfjella. It was common at Steinnabben (locality 34, collected). For a morphological description, see Strandtmann (1967).

N. bifurcatus is 0.2-0.3 mm long, red and densely grey-hairy, and have red legs. It is only reported from Heimefrontfjella (Bowra et al. 1966, Strandtmann 1967), and Vestfjella (Sømme 1980). It was found at the hills south of Svea and at Steinnabben (collected at Steinnabben, locality 34), but was not as common as *T. erebus*. The species is new to Sivorgfjella in Heimefrontfjella. For a morphological description, see Strandtmann (1967, 1978).

T. erebus is 0.2-0.3 mm long, brown to bluish black, have a central dorsal whitish stripe on the abdomen and red legs. It is one of the most widespread mites in Antarctica (Rounsevell 1977, Sømme 1980, 1986). This was the most frequently observed mite, and was common at Basen, Haldorsentoppen and Steinnabben (collected at locality 72 at Basen, and at Steinnabben at locality 34). It was the only observed species at Basen. The species has earlier been reported from both Heimefrontfjella (Bowra et al. 1966) and Vestfjella (Sømme 1980). The species is new to Sivorgfjella in Heimefrontfjella and to Basen in Vestfjella.

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SAMMENDRAG

Midd innsamlet i Heimefrontfjella og Vestfjella (Dronning Maud Land, Antarktis)

Under en biologisk inventering av några nunatakker i bergskedjorna Heimefrontfjella och Vestfjella i västra Dronning Maud Land, Antarktis australsommaren 1991/92 insamlades tre kvalster, *Eupodes tottanfjella*, *Nanorchestes bifurcatus* and *Tydeus erebus*. Några lokaler för dessa arter rapporteras och arternas morfologi, abundans och miljö beskrivs kortfattat. De tre arterna rapporteras som nya för Sivorgfjella i Heimefrontfjella och *T. erebus* är också ny för Basen i Vestfjella. Dessutom ges en kort beskrivning av Heimefrontfjella och Vestfjella och tidigare litteratur som behandlar kvalster i Dronning Maud Land sammanfattas.

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Bokanmeldelse

Palm, E. 1996: Nordeuropas Snudebiller. 1. De kortsnudedede arter (Coleoptera: Curculionidae) - med særlig henblik på den danske fauna. Danmarks Dyreliv Bind 7, 356 pp. Apollo Books. Pris DKR 400

Det er alltid en begivenhet når nye oversikter over biller blir laget i Norden. De kommer sjelden etter at Victor Hansen og Thure Palm avsluttet sine livsverk med bindsterke bidrag. Mangelen på oppdatert bestemmelseslitteratur, som dekker også de nordligste områder, er følebar. Ikke uten en viss spenning tok jeg derfor fatt på det foreliggende arbeidet.

Det ville ha vært rart om man i et arbeid av så stort omfang ikke fant noen feil og svakheter. Innholdsmessig er den største ulempen at de faunistiske dataene ikke er sammenfattet i en tabell. Det ville ha lettet oversikten. Det er noen misforståelser m.h.t. hva som er de riktige forkortelsene for de faunistiske områdene i Norge. Dette har for øvrig Palm selv delvis korrigert (side 16 samt tabell side 15). Videre finnes det noen sammenblandinger m.h.t. forkortelsene og kommunenavn under de ulike artene. For eksempel er Amtbetegnelsen for mange årtier siden endret til kommune (se side 249: Stavanger Amt). Dette kan unnskyldes. Naturligvis finnes det også andre småfeil. For eksempel yter det ikke A. (=Andreas) Strand rettferdighet å bli kalt for E. (=Embrik) Strand (se referanse på side 16).

Det er udelte positivt at artene er illustrert med genitaler og i særdeleshet at det finnes tegninger av spermateca. Dette vil kunne bidra til færre feilbestemmelser for de mest kritiske og misforståtte artsgruppene. Mengden av illustrasjoner generelt er bra, men det synes som om det har vært noen svakheter i selve trykkeprosessen, slik at det har vært noe groing. Fargeplansjene med habitusbilder av artene er oversiktlige og vakre. Honnør til Apollo books for at de har påkostet dem.

Hvorvidt bestemmelsestabellene er gode er umulig å vite før man har prøvd dem over tid, men en gjennomlesning kombinert med billedmaterialet gir et tilforlate-

lig inntrykk. De av oss som har samlet og bestemt arter av slekten *Sitona* har trolig gjort noen traumatiske erfaringer. Det blir derfor spennende å kikke nærmere på slekten når feltsesongen starter, med utgangspunkt i denne boka.

At den norske faunaen er dårligere dokumentert enn den svenske og naturlig nok den danske, faller tilbake på oss i Norge. Men, det er grunn til å sette et spørsmålsteget ved påstanden om at *Otirhynchus arcticus* er et utpreget kystbundet art i Fennoskandia. Det synes noe lettvent å basere seg på Munsters påstand om at *O. desertus* er innvandret til Norge i 1870-årene, basert på det tilgjengelige materialet. Med de store mangler og tilfeldigheter i grunnmaterialet i Norge, er jeg også i tvil om påstanden at *O. nodosus* er så mye mer tallrik i fjellområdene enn i resten av Norge, men den er lettere å fange manuelt der.

Bokas sterke side kan sammenfattes i følgende punkter. Jeg liker helhetskonseptet i den betydningen at det ikke bare er systematikk og oversikt over funn. Det er oppklarende at arter som har vært oversett eller kan forveksles med de «tradisjonelt kjente» er behandlet sammen med arter som kan tenkes å forekomme i Norge. Videre er det en imponerende mengde informasjon også om artenes biologi. Bibliografien er meget omfattende, og letter inngangen for videre arbeid.

Som konklusjon bør det sies at det er vel anvendte penger og nødvendig å skaffe seg boka for de som arbeider med snutebiller. Forhåpentligvis vil den inspirere til økt innsats. Det er derfor med stor interesse jeg ser frem til videre bearbeiding av snutebillene.

Torstein Kvamme

Further records of rare flies from Norway (Diptera: Periscelididae, Stratiomyidae, Scathophagidae, Muscidae, Fanniidae, Calliphoridae, Rhinophoridae, Sarcophagidae, Tachinidae)

Knut Rognes & Lars Ove Hansen

Rognes, K. & Hansen, L.O. 1996. Further records of rare flies from Norway (Diptera: Periscelididae, Stratiomyidae, Scathophagidae, Muscidae, Fanniidae, Calliphoridae, Rhinophoridae, Sarcophagidae, Tachinidae). - Fauna norv. Ser. B 43: 75-79.

The following species are reported from Norway for the first time: *Periscelis annulata* (Fallén, 1813) (Periscelididae), *Zabrachia minutissima* (Zetterstedt, 1838) (Stratiomyidae), *Helina abdominalis* (Zetterstedt, 1846) (Muscidae), *Piezura graminicola* (Zetterstedt, 1846) (Fanniidae), *Melanophora roralis* (L., 1758) (Rhinophoridae), *Ceromya silacea* (Meigen, 1824) (including a record from Sweden) and *Trichactia pictiventris* (Zetterstedt, 1855) (Tachinidae). In addition, data are given for the following rarely recorded species: *Megophthalma pallida* (Fallén, 1819) (Scathophagidae), *Acanthiptera rohrelliformis* (Robineau-Desvoidy, 1830) and *Phaonia goberti* (Mik, 1881) (Muscidae), *Fannia pallitibia* (Rondani, 1866) (Fanniidae), *Bellardia bayeri* (Jacentkovsky, 1937) (Calliphoridae), and *Hilarella hilarella* (Zetterstedt, 1844) (Sarcophagidae).

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INTRODUCTION

During the sorting by the senior author of a large collection of Diptera donated to Zoologisk Museum by the junior author, several interesting species were discovered. Details of these records are given below as a sequel to the paper of Rognes (1995). Taxa new to Norway are marked with an asterisk (*). Specimens are deposited in ZMO, unless otherwise noted. Depository abbreviations: ZMO=Zoological Museum, University of Oslo, KR=collection of Knut Rognes.

The specimen was discovered among insect material reared from elm bolts (*Ulmus glabra*) attacked by dutch elm disease and *Scolytus laevis* Chapuis (Col., Scolytidae). The bolts were kept outdoors in tight muslin bags from November 1991 until October 1992, and the bags were emptied every fifth day. The specimen was identified using Duda (1934) and Shtakelberg (1988). The species is known from the Western Palearctic, including Sweden and Finland, and the Nearctic Regions (Papp 1984)

*Family Periscelididae

**Periscelis annulata* (Fallén, 1813)

BØ, Lier: Gommerud, EIS 28, 1 ♀ among reared material that emerged 27-31 May 1992, L.O. Hansen leg.

Family Stratiomyidae

**Zabrachia minutissima* (Zetterstedt, 1838)

BØ, Drammen: Underlia, EIS 28, 1 ♀ 1-30 June 1992, malaise-trap, L.O. Hansen leg.

This minute fly has most likely been overlooked because of its small size. It is known north to Kuusamo in Finland and Jämtland in Sweden (Rozkosny 1973). Its larva lives under the bark of coniferous trees (i.e. *Picea*, *Abies*, *Pinus*).

Family Scathophagidae

Megophthalma pallida (Fallén, 1819)

BØ, Nedre Eiker: Mjøndalen, Hagatjern, Ryggsæfå, EIS 28, 1 ♀ July 1994, malaise-trap, Y. Berg & L.O. Hansen leg.

This species was reported from Norway by Zetterstedt (1838: 726-727, «Björkvik et Schiervoe Nordlandiae, ..., in Dowre, D. Boheman»; 1846: 2008-2010, [same records, but the «Dowre» record not mentioned], both as *Cordylura pallida*). Siebke (1877: 137) only repeated Zetterstedt's records and had no captures of his own. No specimens exist in the Siebke collection in ZMO. Ringdahl (1952) catalogued the species from Norway, apparently on the basis of Zetterstedt's records. It has already been recorded from Finland (Hackman 1956) and Sweden (Ringdahl 1952). The distribution is Holarctic (Gorodkov 1986).

Family Muscidae

**Helina abdominalis* (Zetterstedt, 1846)

BØ, Hurum: Tofteholmen, EIS 19, 2♂ 2♀ 28 May-7 July 1991, malaise-trap, L. O. Hansen leg.; Drammen: Underlia, EIS 28, 1♂ May 1994, 2♀ August 1994, 1♀ September 1994, malaise-trap, L.O. Hansen leg.

This species is widely distributed in Europe (Pont 1986). It occurs north to Uppland and Gotland in Sweden (Ringdahl 1952, 1956) and Alandia and Nylandia in southern Finland (Tiensuu 1935). The present record raises the number of muscids known from Norway to 290 (cf. Rognes 1986d).

Acanthiptera rohrelliformis (Robineau-Desvoidy, 1830)
AK, Sørum: Lørenfallet, Egner, EIS 37, 1♀ August 1994, malaise-trap, L.O. Hansen & O. Sorlibråten leg.
BØ, Drammen: Underlia, EIS 28, 1♀ August 1994, malaise-trap, L.O. Hansen leg.

The larva of this species lives as scavenger in the nests of vespid wasps. It is a southern species in Fennoscandia and has previously been reported from Rogaland (RY) (Rognes 1982, coll. KR) and Østfold (Siebke 1877). No specimens are present in the Siebke collection in ZMO.

Phaonia goberti (Mik, 1881)

BØ, Lier: Utengen (Egge), EIS 28, 1♂ 1♀ among reared material that emerged 27-31 May 1992, L.O. Hansen leg.

The specimens were teneral and found among insect material reared from elm bolts (*Ulmus glabra*) attacked by dutch elm disease and *Scolytus laevis* Chapuis (Col., Scolytidae). The bolts were kept outdoors in tight muslin bags from November 1991 until October 1992, and the bags were emptied every fifth day. Both specimens had the prosternum bare and the ST1 hairy. Only two males have been known from Norway previously (cf. Rognes 1986).

Family Fanniidae

**Piezura graminicola* (Zetterstedt, 1846)

VE, Våle: Langøya, EIS 19, 2♀ 1 September-26 October 1991, malaise-trap, L.O. Hansen leg. BØ, Nedre Eiker: Mjøndalen, Hagatjern, Ryggsetra, EIS 28, 1♂ 1♀ July 1994, malaise-trap, Y. Berg & L.O. Hansen leg.; Drammen: Underlia, EIS 28, 1♂ August 1994, malaise-trap, L.O. Hansen leg.

With these captures both European species of *Piezura* have been recorded from Norway (cf. Rognes 1995, where *P. boletorum* was reported). In Scandinavia *P. graminicola* is known from Sweden, but not Denmark or Finland (Pont 1986). A total of 44 fanniid species is thus known from Norway at present (cf. Rognes 1985).

Fannia pallitibia (Rondani, 1866)

Ø, Rygge: Ekeby, Gunnarsbybekken, EIS 19, 4♀ 24 August-16 October 1992, malaise-trap, L.O. Hansen & G. Wahlberg. VE, Våle: Langøy, EIS 19, 1♂ 6 July-2 August 1991, 1♀ 1 September-26 October 1991, malaise-trap, L.O. Hansen leg.

A single male has been recorded from VAY (in ZMO) (cf. Rognes 1985), but record not included in Pont (1986).

Family Calliphoridae

Bellardia bayeri (Jacentkovsky, 1937)

BØ, Drammen: Underlia, EIS 28, 1♂ August 1994, malaise-trap, L.O. Hansen leg.

This species is very rare in Fennoscandia and Denmark, and has previously been taken in Norway only in VAY (Rognes 1991).

Family Rhinophoridae

**Melanophora roralis* (L., 1758)

BØ, Drammen: Underlia, EIS 28, 1♂ July 1992, 2♀ 1♀ August 1994, 1♂ September 1994, malaise-trap, L.O. Hansen leg.

This species is widely distributed in Europe. It is a parasite of *Porcellio scaber* (Isopoda). With the present record seven species of Rhinophoridae are known from Norway (cf. Rognes 1986b).

Family Sarcophagidae

Hilarella hilarella (Zetterstedt, 1844)

VE, Våle: Langøya, EIS 19, 2♀ 8 July-2 August 1991, malaise-trap, L.O. Hansen leg.

Siebke (1877: 90, as *Miltogramma hilarella*) reported to have taken a female in the Botanical garden of Oslo (at Toyen). Since no specimen could be located in ZMO, the record was not accepted by Rognes (1986a). The species has an Holarctic distribution and is also known from Denmark, Sweden and Finland (Pape 1987). This record brings the number of Sarcophagidae known from Norway to 50 species.

Family Tachinidae

**Ceromya silacea* (Meigen, 1824)

Norway: BØ, Nedre Eiker: Mjøndalen, Hagatjern, Ryggsetra, EIS 28, 1♀ June 1994, Y. Berg & L.O. Hansen.

Sweden: Upl., Öregrund nr Sunnanö, 1♂ 14-17 July 1980, A.C. Pont leg. (KR)

These are the first records from Scandinavia. The species is reported from Finland by Andersen (1983: 12), but not by Hackman (1980). It is neither reported from Fennoscandia and Denmark in Herting & Dely-Draskovits (1993) nor from Sweden by Ringdahl (1952). It is a parasite of *Lithacodia pygarga* Hufn. (Lep. Noctuidae) (Tschorsnig & Herting 1994).

**Trichactia pictiventris* (Zetterstedt, 1855)

BØ, Nedre Eiker: Mjøndalen, Hagatjern, Ryggsetra, EIS 28, 5♀ July 1994, Y. Berg & L.O. Hansen.

Herting & Dely-Draskovits (1993) report this rare species from Austria, Switzerland, Czechoslovakia, France, Sweden and Israel. Tschorsnig & Herting (1994) cite an old record from Hessen in Germany. From Sweden only the holotype is known, which was found by Bohemann in Sk.: Degeberga (Ringdahl 1945). The host is unknown.

With the addition of these two species, the number of tachinids known from Norway is at present 193 species (cf. Rognes 1986c, 1995).

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SAMMENDRAG

Flere funn av sjeldne fluer fra Norge (Diptera: Periscelididae, Stratiomyidae, Scathophagidae, Muscidae, Fanniidae, Calliphoridae, Rhinophoridae, Sarcophagidae, Tachinidae)

Følgende arter er rapportert fra Norge for første gang: *Periscelis annulata* (Fallén, 1813) (Periscelididae), *Zabrachia minutissima* (Zetterstedt, 1838) (Stratiomyidae), *Helina abdominalis* (Zetterstedt, 1846) (Muscidae), *Piezura graminicola* (Zetterstedt, 1846) (Fanniidae), *Melanophora roralis* (L., 1758) (Rhinophoridae), *Ceromya silacea* (Meigen, 1824) (including a record from Sweden) og *Trichactia pictiventris* (Zetterstedt, 1855) (Tachinidae). I tillegg er det gitt funnopplysninger om følgende sjeldne arter: *Megophthalma pallida* (Fallén, 1819) (Scathophagidae), *Acanthiptera rohrelliformis* (Robineau-Desvoidy, 1830) og *Phaonia goberti* (Mik, 1881) (Muscidae), *Fannia pallitibia* (Rondani, 1866) (Fanniidae), *Bellardia bayeri* (Jacentkovsky, 1937) (Calliphoridae), og *Hilarella hilarella* (Zetterstedt, 1844) (Sarcophagidae).

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Bokanmeldelse

Ragnhild Sundby: Insekter og deres mangfoldige verden. 270 sider, kr 325. Landbruksforlaget 1995

Det er gledelig at veteraner innen norsk zoologi som Ragnhild Sundby deler livslang erfaring og akkumulert fagkunnskap med oss andre gjennom å skrive bøker. Det er viktig å spre entomologisk viten. Mange deler nok den oppfatning at fagfeltet har vært et slags "stebarn" innen zoologien. Kanskje har *det* noe å gjøre med entomologiens "tilgjengelighet". Tatt i betraktning det mangfold insektene utgjør, og deres økologiske funksjon - jf bokens sentrale tema - så vil det alltid være behov for, og plass til, ny litteratur på området. Alle har vi et forhold til insekter, det være seg som fagzoologer eller personer med mer generell naturinteresse. Det er derfor nyttig - og naturlig - at boken innledningsvis spesielt fokuserer relasjoner mellom mennesker og insekter. Og det er utvilsomt mange som ønsker å vite mer om disse utallige småkrypene, som er til glede for noen, men dessverre til plage for flere. Men kanskje nettopp derfor, dvs på grunn av at de negative interaksjonene sikkert er de mest fokuserte blant folk flest, er det viktig at insektenes sentrale betydning, i nær sagt alle økosystemer, blir forklart på en fengende og forståelig måte. Det synes jeg Ragnhild Sundby har klart.

En viktig del av boken omhandler generelle økologiske aspekter ved insekter, insektenes betydning som skadegjørere på nyttevekster, pollinatorer og andre interaksjoner med botanikken, parasittisme og ikke minst biologisk kontroll. Her vet vi Ragnhild Sundby spesielt er på hjemmebane. Det er også et interessant kapittel som fokuserer predator-byttedyr interaksjoner. Som vertebratzoolog må en erkjenne at de mange former slike interaksjoner kommer til uttrykk på i insektverdenen overgår det en finner blant andre dyregrupper. Personlig synes jeg denne delen av boken er mest interessant. Det har kanskje å gjøre med at det å gå løs på insektsystematikk virker som en så skremmende, overveldende og uoverstigelig oppgave at en uvegerlig rygger tilbake for det, om lysten til å treng inn i materien måtte være aldri så stor. Vi vet alle hvilket møysommelig arbeid som ligger bak det å kunne opptre som taksonom.

De to tredjedelene av boken som er avsatt til systematiske beskrivelser er bygget opp på bakgrunn av hvilke miljøkrav og tilpasninger artene har, dvs om de lever i vann, jord, vegetasjon, er parasitter på andre dyregrupper osv. Stoffet er tilrettelagt for norske forhold, dvs at de mange interessante eksemplene er hentet fra vår egen faunistiske virkelighet. Dette er for så vidt gjennomgående for hele boken, og en opplagt styrke. Så vidt meg bekjent er tilsvarende, samlet fremstilling om insektenes systematikk, økologi, anatomi etc. ikke tidligere utgitt på norsk. For personer med perifer kunnskap om insekter er fagordforklaringen bak i boken nyttig.

Avhengig av målgruppe vil nok den oppbygning boken har fått vekke debatt. Den systematiske oversikten som kommer langt bak kunne f eks vært plassert lengre frem. Kanskje kunne den også ha vært mer utfyllende. Erfaring tilsier imidlertid at det aldri vil være enighet om slike aspekter ved faglige fremstillinger, så det får bli opp til den enkelte forfatter å velge form, og så får kritikken komme som den vil - noe den uansett gjør. Det vil også kunne diskuteres hva som er bokens målgruppe, f eks hvor anvendelig den vil være som lærebok ved universiteter og høyskoler. I en del sammenhenger vil den trolig bli for lett. Imidlertid er det normalt ikke slik lengre at "pensum" er én bok. Sundby's "Insekter og deres mangfoldige verden" vil uten tvil være et nyttig supplement for lærere på ulike nivå innen utdanningssektoren. Ikke minst vil den tjene som basislitteratur for oss som har mer generell interesse for økologi, fauna og flora. *Fauna norvegica*-redaksjonen ønsker forfatteren tillykke med boken.

Kjetil Bevanger

Aculeata of Norway 2. Dryinidae and Embolemidae (Hym., Apocrita)

Lars Ove Hansen & Massimo Olmi

Hansen, L.O. & Olmi, M. 1996. Aculeata of Norway. 2. Dryinidae and Embolemidae (Hym., Apocrita). - Fauna norv. Ser. B. 43: 81–88.

The present survey of the distribution and frequency of the 28 hitherto recorded species of Dryinidae and Embolemidae in Norway is based on a total of 1188 specimens. 108 regional records are presented. Biology and world distribution of the species are briefly discussed.

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INTRODUCTION

The world fauna of Dryinidae consists of about 1 100 described species (Olmi 1984, 1989). About 32 dryinids are recorded from Britain, 32 from Sweden, 26 from Denmark and 28 from Finland (Gauld & Bolton 1988, Olmi 1994). In contrast, the world fauna of Embolemidae consists of perhaps only a dozen described species (Gauld & Bolton 1988), and the family is represented with only *Embolemus ruddii* Westwood, 1833 in Fennoscandia and Denmark (Olmi 1994). The first Norwegian dryinid was recorded by Strand (1898) viz. *Dryinus ruficornis* (Dalman, 1818) from Finnmark. In 1905 Kieffer described *Gonatopus conjunctus* from Stavanger, but this species was later found to be a junior synonym of *G. bicolor* (Haliday, 1828). The world fauna was revised by Olmi (1984), and *Anteon jurineanum* Latreille, 1809, *A. brachycerum* (Dalman, 1823) and *A. pubicorne* (Dalman, 1818) were then added to the Norwegian list. Greve & Hauge (1989) extended the list with *Aphelopus melaleucus* (Dalman, 1818) and *Anteon ephippiger* (Dalman, 1818) together with the first Norwegian record of the embolemid *E. ruddii*. The Fennoscandian and Danish species of Dryinidae and Embolemidae were revised by Olmi (1994) which presented a total of 28 Norwegian species.

The dryinid larvae are parasitoids of both immature and adult Auchenorrhyncha (Homoptera), and usually act as ectoparasitoids in the early instars and as endoparasitoids in the later instars (Olmi 1984, 1989, Gauld & Bolton 1988). Adult females of some subfamilies, i.e. Anteoninae, Dryininae, Gonatopodinae, may also prey directly on the leafhoppers (Richards 1939, Olmi 1994). The biology of *E. ruddii* is unknown, but the larvae of a nearctic embolemid are parasitoids on nymphs of some Auchenorrhyncha (Gauld & Bolton 1988, Wharton 1989).

Drynidae and Embolemidae together with Bethyliidae, Chrysididae and three tropical and subtropical families form the superfamily Chryridoidea (formerly Bethyloidea). The present work is the second in a series of planned publications on aculeate Hymenoptera which task is to highlight the distribution of this poorly known group in Norway. Part one dealt with the family Bethyliidae (Hansen 1995).

MATERIAL AND METHODS

An initial study of Norwegian museum collections revealed 5 dryinids at the Zoological Museum of Oslo

(ZMO), two at Tromsø Museum (TM) and one at the Zoological Museum of Bergen (ZMB). Six specimens were sweep-netted in the course of the present study, but sampling with malaise-traps in 1991–93 at the sites given in Table 1 gave most of the specimens. In addition some malaise-trap samples were provided by other collectors from the following localities (see Table 2): Gunnarnes June–September 1992 (leg. P. Tangen), Kirkejordet May–September 1986 (leg. T. Hofsvang), Bjelland June–July 1992 (leg. A. Bakke), Lisleherad April–October 1993 (leg. A. Bakke), Kværner, Lutdalen and Kjaglidalen May–August 1990 (leg. M. Falck). The specimens have been named by means of the keys in Olmi (1984, 1989, 1994). The material from the present investigation is deposited at the Zoological Museum of Oslo and in the authors' private collection.

THE RECORDS

The following abbreviations have been used: SN = sweep netted and MT = malaise-trap. Species marked with an asterisk (*) are hitherto not recorded from Norway. Further data about the localities and the collectors are given in Table 2. Regional abbreviations are given in accordance with Økland (1981).

Family Dryinidae

Subfamily aphelopinae

Aphelopus melaleucus (Dalman, 1818)

Ø: Ekeby, 4♂♂ 14♀♀ 19 May–17 June 1992 (MT), 3♂♂ 3♀♀ 17 June–21 July 1992 (MT), 4♂♂ 10♀♀ 21 July–24 August 1992 (MT), 1♂ 2♀♀ 24 August–16 October 1992 (MT). AK: Kjaglidalen, 1♀ 11–22 June 1990 (MT), 1♂ 22 June–5 July 1990 (MT); Kværner, 2♀♀ 12–26 June 1990 (MT); Lutdalen, 1♀ 6–22 June 1990 (MT). BØ: Underlia, 2♀♀ June 1992 (MT), 1♂ May 1993 (MT), 1♀ July 1993 (MT); Kinnartangen, 4♂♂; 3♀♀ 28 May–6 July 1991 (MT); Tofteholmen, 6♂♂ 1♀ 28 May–7 July 1991 (MT), 2♀♀ 7–31 July 1991 (MT). VE: Langøya, 1♂ 28 May–8 July 1991 (MT); Kommersøya, 3♂♂ 2–28 May 1991 (MT). TEI: Lisleherad, 2♀♀ 22 June–6 August 1993 (MT). AAY: Bjelland, 3♀♀ 5–15 June 1992 (MT). Not verified records: HOY: Sjoalemyr, 1988, det. A. Fjeldså (Greve & Hauge 1989).

A. atratus (Dalman, 1823)

Ø: Ekeby, 6♂♂ 8♀♀ 19 May–17 June 1992 (MT), 3♀♀ 17 June–21 July 1992 (MT), 3♂♂ 3♀♀ 21 July–24 August 1992 (MT), 1♂ 24 August–16 October 1992 (MT). AK: Kjaglidalen, 2♂♂ 26 May–11 June 1990 (MT), 1♀ 22 June–5 July 1990 (MT); Lutdalen, 1♀ 6–22 June 1990 (MT); Kirkejordet, 1♀ 19–26 June 1986 (MT). BØ: Underlia, 2♂♂ 1♀ June

Table 1. Localities investigated with malaise-traps. Number of traps (Σ traps), collected specimens (Σ spm.) and species (Σ spp.) on each locality together with collecting periods are given. See Table 2 for further information about the localities.

Locality	Period	Σ traps	Σ spm.	Σ spp.
Ekeby	19 May – 16 Oct. 1992	2	101	12
Kinnartangen	14 April – 24 Oct. 1991	1	44	7
Kinnartangen	1 May – 1 Sept. 1993	1	54	10
Kommersøya	2 May – 26 Oct. 1991	1	7	5
Langøya	2 May – 26 Oct. 1991	2	118	11
Tofteholmen	1 May – 26 Oct. 1991	2	394	11
Underlia	1 May – 31 Oct. 1992	1	203	16
Underlia	1 May – 30 Sept. 1993	1	66	11
Vinstra	1 May – 16 Sept. 1992	1	13	4
Vårviken	1 May – 31 Oct. 1992	1	19	7

Table 2. Localities with EIS- and UTM-references. Abbreviations: BRIO = Biosystematic Research Institute Ottawa; LOH = Lars O. Hansen priv. collection; MNP = Muséum National d'Histoire Naturelle Paris; TM = Tromsø Museum; ZMB = Zoological Museum Bergen; ZMC = Zoological Museum Copenhagen; ZMH = Zoological Museum Helsinki; ZMO = Zoological Museum Oslo; ZMHB = Zoological Museum Humboldt University, Berlin.

Locality	Region	EIS	Municipality	UTM (ED-50) 32V	Leg.:(ex coll.)
Bjelland	AAY	6	Tromøy	MK 93.80	A. Bakke (LOH)
Bukta, Bygdøy	AK	28	Oslo	NM 94.41-42	T. Münster (ZMO)
Ekeby	Ø	19	Rygge	NL 94.84	L.O. Hansen & G.Walberg (LOH)
Gunnarnes, Rolvsøy	FV	186	Måsøy	LU 94.79	P. Tangen (LOH)
Hattfjellidal	NSI	116	Hattfjellidal	VN 53.75	Olmi 1984 (BRIO, ZMHB)
Hell	NTI	92	Stjørdal	NR 94-95.36	(ZMH)
Iglatjødno, Øvre Økland	HOY	23	Stord	LM 01.35	Greve & Hauge 1989 (ZMB?)
Kinnartangen	BØ	28	Røyken	NM 75.20	L.O. Hansen (LOH)
Kirkejordet, Ås	AK	28	Ås	NM 99.17	T. Hofsvang (LOH)
Kirkøen	Ø	12?	Hvaler	PL 13-20.43-53	T. Münster (ZMO)
Kjaglidalen	AK	28	Bærum	NM 79.47	M. Falck (LOH)
Kommersøya	VE	19	Sande	NL 74.99	L.O. Hansen (LOH)
Kværner	AK	28	Oslo	PM 00.42	M. Falck (LOH)
Langesund	TEY	11	Bamble	NL 42-43.40	Olmi 1984 (ZMHB)
Langøya	VE	19	Våle	NL 78.96	L.O. Hansen (LOH)
Leirsjøen	HES	38	Eidskog	33V-UG 41.42	L.O. Hansen (LOH)
Lisleherad	TEI	27	Notodden	NM 15.07	A. Bakke (LOH)
Lovund	NSY	121	Lurøy	UP 81.63	T. Soot-Ryen (TM)
Lutdalen	AK	28	Oslo	PM 05.41	M. Falck (LOH)
Mølen	BØ	19	Hurum	NL 85.95	L.O. Hansen (LOH)
Narvik	NNØ	139	Narvik	WR 98-99.93-94	[Olmi 1984 (BRIO)]
Ogna	RY	3	Hå	LK 13-14.90-91	T. Münster (ZMO)
Opheimsbakken, Aurdal	OS	53	Sør-Aurdal	NN 22.56	B. Petersen (ZMC)
Røa	AK	28	Oslo	NM 91.47	A. Bakke (ZMO)
Sevheimsheia	RY	14	Finnøy	LL 16.62	J. Skartveit (ZMB)
Sjoalemyr, Solhaug	HOY	23	Stord	LM 02.37-38	Greve & Hauge 1989 (ZMB?)
Stavanger	RY	7	Stavanger	LL 08-14.36-44	E. Strand (MNP)
Tofteholmen	BØ	19	Hurum	NL 88.98	L.O. Hansen (LOH)
Tyristrand	BØ	36	Ringerike	NM 61.61	A. Dahl (LOH)
Tømte	AK	37	Nannestad	PM 14.86	A. Bakke (ZMO)
Underlia	BØ	28	Drammen	NM 66.24	L.O. Hansen (LOH)
Vestertana	FN	183	Tana	NU 31-53.17-22	A. Fjellberg (TM)
Vinstra	ON	62	Nord-Fron	NP 43.28	K. Myhr & L.O. Hansen
Vårviken	BV	35	Rollag	NM 15.53	B.A. Sagvolden (LOH)

1992 (MT), 4♂♂ 2♀♀ July 1992 (MT), 2♂♂ 1♀ July 1993 (MT); Kinnartangen, 4♂♂ 4♀♀ 28 May–6 July 1991 (MT), 2♂♂ 1♀♀ 6 July–4 August 1991 (MT), 1♂ August 1993 (MT); Tofteholmen, 6♂♂ 28 May–7 July 1991 (MT), 1♂ 1♀ 7–31 July 1991 (MT). **VE**: Kommersøya, 1♀ 9 July–2 August 1991 (MT). **TEI**: Lisleherad, 1♀ 22 June–6 August 1993 (MT).

A. serratus Richards, 1939

Ø: Ekeby, 5♂♂ 6♀♀ 19 May–17 June 1992 (MT). **AK**: Kjaglidalen 1♀ 26 May–11 June 1990 (MT), 1♂ 22 June–5 July 1990 (MT); Kværner, 1♂ 3♀♀ 12–26 June 1990 (MT); Kirkejordet, 1♀ 26 June–3 July 1986 (MT). **ON**: Vinstra, 1♀ 25 May–30 June 1992 (MT), 2♀♀ 30 June–6 August 1992 (MT). **BØ**: Underlia, 2♀♀ June 1992 (MT), 4♀♀ July 1992 (MT); Tofteholmen, 1♂ 1♀ 28 May–7 July 1991 (MT). **VE**: Langøya, 1♀ 28 May–8 July 1991, 2♂♂ 16♀♀ 8 July–2 August 1991 (MT); Kommersøya, 1♀ 9 July–2 August 1991 (MT). **AAY**: Bjelland, 1♂ 5–15 June 1992 (MT).

A. camus Richards, 1939

ON: Vinstra, 1♂ 1♀ 30 June–6 August 1992 (MT). **BØ**: Underlia, 13♂♂ 4♀♀ June 1992 (MT), 4♂♂ July 1992 (MT), 2♀♀ July 1993 (MT), 1♂ 1 August–30 September 1993; Kinnartangen, 2♂♂ June 1993 (MT). **BV**: Vårviken, 1♂ June 1992 (MT), 2♀♀ July 1992 (MT). **VE**: Langøya, 16♂♂ 8 July–2 August 1991 (MT), 2♂♂ 2 August–1 September 1991 (MT).

A. nigriceps Kieffer, 1905

TEI: Lisleherad, 1♂ 22 June–6 Aug. 1993 (MT).

A. querceus Olmi, 1984

Ø: Ekeby, 1♂ 17 June–21 July 1992 (MT). **AK**: Kjalglidalen, 2♀♀ 27 July–11 August 1990 (MT); Kirkejordet, 1♂ 3–10 July 1986 (MT). **BØ**: Underlia, 1♀ July 1992 (MT), 3♂♂ July 1993 (MT), 1♂ 1 August–30 September 1993 (MT); Kinnartangen, 2♂♂ July 1993 (MT). **VE**: Langøya, 1♂ 2 August–1 September 1991 (MT).

Subfamily Anteoninae

Lonchodryinus ruficornis (Dalman, 1818)

Ø: Ekeby, 1♂ 24 August–16 October 1992 (MT).

AK: Kjaglidalen, 1♂ 22 June–5 July 1990 (MT); Tømte, 1♂ 14 June 1953; Lutdalen, 6♂♂ 2♀♀ 6–22 June 1990 (MT); Kirkejordet, 2♂♂ 3–10 July 1986 (MT). **OS**: Opheimsbakken, 4♂♂ 1♀ 20–25 April 1980 (Olmi 1984). **ON**: Vinstra, 1♂2♀♀ 30 June–6 August 1992 (MT). **BØ**: Tyristrand, 2♂♂ 10 July 1990; Underlia, 5♂♂1♀ June 1992 (MT), 1♂2♀♀ July 1992 (MT), 1♂ August 1992 (MT), 1♂2♀♀ July 1993 (MT), 1♂2♀♀ 1 August–30 September 1993 (MT); Kinnartangen, 1♂1♀ 28 May–6 July 1991 (MT), 1♂4♀♀ 6 July–4 August 1991 (MT), 4♂♂ July 1993 (MT), 2♂♂1♀ August 1993 (MT); Tofteholmen, 52♂♂15♀♀ 7–31 July 1991 (MT), 7♂♂2♀♀ 31 July–1 Sept. 1991 (MT). **BV**: Vårviken, 1♂ June 1992 (MT), 1♂ July 1992 (MT). **VE**: Langøya, 5♂♂1♀ 28 May–8 July 1991 (MT), 1♀ 8 July–2 August 1991 (MT), 3♀♀ 2 August–1 September 1991 (MT). **AAY**: Bjelland, 3♂♂2♀♀ 5–15 June 1992 (MT). **NTI**: Hell. **NSY**: Lovund, 1♂ 22 July 1948. **NSI**: Hattfjelldal (Olmi 1984). **FV**: Gunnarnes, 2♀♀ July 1992 (MT). “Norway” (Olmi 1984). **Not verified records**: “Finnmark” (Strand 1898).

Anteon jurineanum Latreille, 1809

BØ: Underlia, 1♂ June 1992 (MT). **BV**: Vårviken, 3♀♀ June 1992 (MT). **TEI**: Lisleherad, 1♂ 30 April–27 May 1993 (MT), 1♂1♀ 22 June–6 August 1993 (MT). **NNØ**: Narvik (Olmi 1984).

A. brachycerum (Dalman, 1823)

AK: Kjaglidalen, 1♀ 26 May–11 June 1990 (MT). **TEY**: Langesund (Olmi 1984). **Not verified records**: **HOY**: Iglatjødno, 1988, det. A. Fjeldså (Greve & Hauge 1989).

A. arcuatum Kieffer, 1905

AK: Kjaglidalen, 3♀♀ 26 May–11 June 1990 (MT).

A. flavicorne (Dalman, 1818)

Ø: Ekeby, 4♀♀ 19 May–17 June 1992 (MT). **AK**: Kjaglidalen, 1♂1♀ 26 May–11 June 1990 (MT); Kværner, 2♂♂1♀ 12–26 June 1990 (MT). **TEI**: Lisleherad, 1♀ 27 May–22 June 1993 (MT).

A. ephippiger (Dalman, 1818)

BØ: Underlia, 1♂ August 1992 (MT). **Not verified records**: **HOY**: Sjoalemyr, 1988, det. A. Fjeldså (Greve & Hauge 1989).

A. pubicorne (Dalman, 1818)

Ø: Ekeby, 3 ♂♂ 19 May–17 June 1992 (MT), 4 ♂♂ 17 June–21 July 1992 (MT), 1 ♂ 24 August–16 October 1992 (MT). **AK:** Kjaglidalen, 1 ♀ 26 May–11 June 1990 (MT), 1 ♀ 11–22 June 1990 (MT), 2 ♀♀ 22 June–5 July 1990 (MT); Røa, 1 ♀ 22 June 1953; Kirkejordet, 6 ♂♂ 12–19 June 1986 (MT), 11 ♂♂ 19–26 June 1986 (MT), 1 ♂ 26 June–3 July 1986 (MT), 6 ♂♂ 3–10 July 1986 (MT), 5 ♂♂ 10–17 July 1986 (MT). **OS:** Opheimsbakken, 9 ♂♂ 1 ♀ 20–25 April 1980 (Olimi 1984). **ON:** Vinstra, 2 ♂♂ 25 May–30 June 1992 (MT). **BØ:** Underlia, 76 ♂♂ 2 ♀♀ June 1992 (MT), 10 ♂♂ July 1992 (MT), 2 ♂♂ August 1992 (MT), 8 ♂♂ 2 ♀♀ July 1993 (MT); Kinnartangen, 1 ♂ 1 ♀ 28 May–6 July 1991 (MT), 1 ♂ 1 ♀ 6 July–4 August 1991 (MT), 1 ♀ 4 August–8 September 1991 (MT), 5 ♂♂ 1 ♀ June 1993 (MT), 12 ♂♂ July 1993 (MT); Tofteholmen, 58 ♂♂ 28 May–7 July 1991 (MT), 77 ♂♂ 1 ♀ 7–31 July 1991 (MT), 2 ♂♂ 31 July–1 September 1991 (MT). **BV:** Vårviken, 3 ♂♂ June 1992 (MT), 1 ♂ July 1992 (MT). **VE:** Langøya, 26 ♂♂ 2 ♀♀ 28 May–8 July 1991 (MT), 9 ♂♂ 2 ♀♀ 8 July–2 August 1991 (MT); Kommersøya, 1 ♂ 28 May – 9 July 1991 (MT). **TEI:** Lisleherad, 1 ♀ 22 June – 6 Aug. 1993 (MT). **AAV:** Bjelland, 24 ♂♂ 1 ♀ 5 – 15 June 1992 (MT), 1 ♂ 15 June–5 July 1992 (MT). **NSI:** Hattfjelldal (Olimi 1984). **Not verified records:** **HOY:** Sjoalemyr, 1988, det. *A. fjeldså* (Greve & Hauge 1989).

A. infectum (Haliday, 1837)

Ø: Ekeby, 1 ♀ 19 May–17 June 1992 (MT).

A. exiguum (Haupt, 1941)

Ø: Ekeby, 1 ♀ 17 June–21 July 1992 (MT), 2 ♀♀ 21 July–24 August 1992 (MT), 1 ♀ 19 August 1993 (SN). **AK:** Kirkejordet, 1 ♀ 3–10 July 1986 (MT). **BØ:** Underlia, 4 ♂♂ 2 ♀♀ June 1992 (MT), 10 ♀♀ July 1992 (MT), 3 ♀♀ August 1992 (MT), 1 ♂ 7 ♀♀ July 1993 (MT), 15 ♀♀ 1 August–30 September 1993 (MT); Kinnartangen, 13 ♂♂ June 1993 (MT), 4 ♂♂ July 1993 (MT), 2 ♀♀ August 1993 (MT); Tofteholmen, 41 ♀♀ 7–31 July 1991 (MT), 39 ♀♀ 31 July–1 September 1991 (MT). **BV:** Vårviken, 1 ♀ July 1992 (MT). **VE:** Langøya, 1 ♂ 28 May–8 July 1991 (MT), 11 ♀♀ 8 July–2 August 1991 (MT), 1 ♀ 2 August–1 September 1991 (MT). **TEI:** Lisleherad, 1 ♀ 27 May–22 June 1993 (MT). **AAV:** Bjelland, 2 ♀♀ 5 July–3 August 1992 (MT).

A. tripartitum Kieffer, 1905

Ø: Ekeby, 2 ♂♂ 19 May–17 June 1992 (MT). **BØ:** Underlia, 5 ♂♂ 2 ♀♀ May 1993 (MT); Kinnartangen, 8 ♂♂ 2–28 May 1991 (MT), 1 ♀ July 1993 (MT); Tofteholmen, 37 ♂♂ 4 ♀♀ 2–28 May 1991 (MT), 6 ♂♂ 1 ♀ 28 May–7 July 1991 (MT). **AAV:** Bjelland, 1 ♂ 5–15 June 1992 (MT).

A. gaullei Kieffer, 1905

Ø: Ekeby, 1 ♀ 17 June–21 July 1992 (MT). **AK:** Kirkejordet, 2 ♂♂ 3–10 July 1986 (MT). **BØ:** Underlia, 11 ♂♂ 6 ♀♀ June 1992 (MT), 4 ♂♂ 1 ♀ July 1992 (MT), 1 ♂ 3 ♀♀ July 1993 (MT); Kinnartangen, 2 ♀♀ 6 July–4 August 1991 (MT), 2 ♀♀ July 1993 (MT); Tofteholmen, 2 ♀♀ 28 May–7 July 1991 (MT), 6 ♀♀ 7–31 July 1991 (MT); Mølen, 1 ♀ 8 July 1991 (SN). **BV:** Vårviken, 2 ♀♀ June 1992 (MT), 1 ♀ July 1992 (MT). **VE:** Langøya, 1 ♂ 7 ♀♀ 28 May–8 July 1991 (MT), 3 ♀♀ 8 July–2 August 1991 (MT). **AAV:** Bjelland, 2 ♂♂ 5–15 June 1992 (MT).

A. fulviventre (Haliday, 1828)

Ø: Ekeby, 2 ♂♂ 19 May–17 June 1992 (MT), 1 ♀ 17 June–21 July 1992 (MT). **AK:** Kjaglidalen, 1 ♀ 22 June–5 July 1990 (MT); Lutdalen, 1 ♀ 6–22 June 1990 (MT); Kirkejordet, 1 ♂ 19–26 June 1986 (MT), 1 ♂ 26 June–3 July 1986 (MT). **HES:** Leirsjøen, 1 ♂ 27 June 1993 (SN). **BØ:** Underlia, 8 ♂♂ June 1992 (MT), 2 ♀♀ July 1992 (MT); Mølen, 1 ♀ 2 August 1991 (SN); Tofteholmen, 1 ♂ 28 May–7 July 1991 (MT), 1 ♀ 7–31 July 1991 (MT). **AAV:** Bjelland, 5 ♂♂ 5–15 June 1992 (MT).

Subfamily Dryininae

Dryinus niger Kieffer, 1904

TEI: Lisleherad, 2 ♀♀ 22 June–6 August 1993 (MT).

Subfamily Gonatopodinae

Gonatopus helleni (Raatikainen, 1961)

[= *Dicondylus dichromus* (Kieffer, 1906), preocc.]

ON: Vinstra, 1 ♂ 25 May–30 June 1992 (MT), 2 ♂♂ 30 June–6 August 1992 (MT). **BØ:** Underlia, 2 ♂♂ June 1992 (MT), 3 ♂♂ July 1992 (MT), 3 ♂♂ July 1993 (MT); Kinnartangen, 1 ♂ August 1993 (MT).

G. bicolor (Haliday, 1828)

[= *G. conjunctus* Kieffer, 1905, preocc.]

VE: Langøya, 1 ♂ 28 May–8 July 1991 (MT). **RY:** Stavanger (Kieffer 1905, Olmi 1984).

G. distinctus Kieffer, 1906

BØ: Tofteholmen, 9♂♂ 28 May–7 July 1991 (MT).

RY: Sevheimsheia, 1–16 July 1992 (MT).

G. pedestris Dalman, 1818

Ø: Kirkøy, 1♀ May 1926.

G. lunatus Klug, 1810

BØ: Underlia, 1♂ June 1992 (MT). **VE:** Langøya, 1♂ 28 May–8 July 1991 (MT).

G. striatus (Kieffer, 1905)

AK: Bukta, 1♀ primo May 1934. **BØ:** Kinnartangen, 4♂♂ 2–28 May 1991 (MT).

G. clavipes (Thunberg, 1827) new comb.

[= *Gelis clavipes* Thunberg, 1827]

[= *Gonatopus sepsoides* Westwood, 1833 new syn.]

AK: Kirkejordet, 1♂ 19–26 June 1986 (MT). **BØ:** Underlia, 5♂♂ June 1992 (MT), 1♂ July 1993 (MT); Kinnartangen, 1♂ June 1993 (MT); Tofteholmen, 1♂ 2–28 May 1991 (MT), 7♂♂ 28 May–7 July 1991 (MT), 5♂♂ 7–31 July 1991 (MT), 1♂ 31 July–1 September 1991 (MT). **BV:** Vårviken, 3♂♂ June 1992 (MT). **VE:** Langøya, 2♂♂ 28 May–8 July 1991 (MT), 2♂♂ 8 July–2 August 1991 (MT); Kommersøya, 1♂ 28 May–9 July 1991 (MT). **TEI:** Lisleherad, 1♂ 22 June–6 August 1993 (MT). **RY:** Ogna, 1♀ June 1919. **FN:** Vestertana, 1♀ 9 July 1989.

Notes on nomenclature: The first formal placement of *G. sepsoides* Westwood, 1833 as a new junior synonym of *Gonatopus clavipes* (Thunberg, 1827) was made by Olmi (1994), although not indicated as “new synonymy” in that work. The replacement was done on the basis of our examination of the holotype of *Gelis clavipes* Thunberg, 1827 kept in the collections of the Zoological Museum of the Uppsala University, Sweden. The ensuing new combination *Gonatopus clavipes* (Thunberg, 1827) was also first introduced by Olmi (1994) although not labelled “new comb.” by him. Unfortunately, it was assumed that the present paper, where the new synonymy and the new combination were supposed to be published, would appear in print before Olmi (1994).

Family Embolemidae

Embolemus ruddii Westwood, 1833

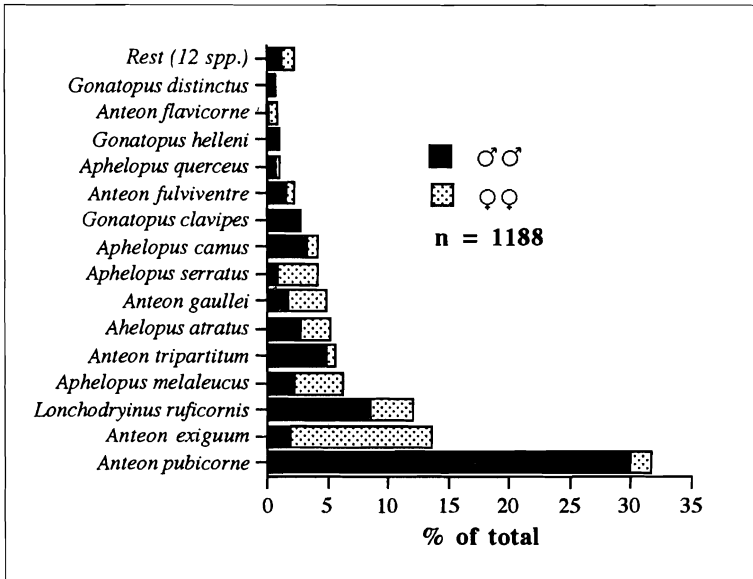
BØ: Underlia, 1♂ August 1992 (MT). **TEI:** Lisleherad, 1♂ 22 June–6 August 1993 (MT). **Not verified records:** **HOY:** Iglatjødno, 1988; Sjoalemyr, 1988, det. A. Fjeldså (Greve & Hauge 1989).

DISCUSSION

All together 1 188 specimens were examined, and 99 % of these were taken in malaise-traps. Thus, this method seems to be an efficient sampling method for these families. The most abundant species were certainly *A. pubicorne*, which made up more than 30 % of the total sampled material, and together with *L. ruficornis* and *A. exiguum* more than 57 % of the material (Figure 1). On the other hand five species (i.e. *A. nigriceps*, *A. arcuatum*, *A. infectum*, *D. niger* and *G. pedestris*) were collected on only one locality each, and together constituted less than 0.67 % of the total material. Most of the species recorded in this investigation are found widespread and quite common in Europe and eastwards into Russia, but some species, e.g. *A. serratus*, *A. camus*, *D. niger* and *G. bicolor*, are only known from Europe (Olmi 1984, 1989, 1994).

Two more species may be expected in Norway. These are *Gonatopus distinguendus* Kieffer, 1905 and *G. formicarius* Ljungh, 1810, which are both present in southern Sweden, Denmark, Finland and Britain (Olmi 1984, 1994). Further sampling may probably reveal these species in Norway as well.

The sampled material of *A. pubicorne* and *A. exiguum* exhibited a remarkably skew “sex ratio” (Figure 1). In the former species the ♂:♀ ratio is 18:1, while the latter exhibits a 1:6 ratio. This may be an artifact resulting from different activity patterns in the two species. However, this assumption seems to be unreasonable since the two species are so closely related. The two species may also in fact be conspecific as proposed by Olmi (1984). Their combined sex ratio is 2.4:1, which seems to be more in accordance with the ratios in the other dryinid species (Figure 1). Thirdly, the skew ratio may be due to the fact that females of Dryinidae are able to reproduce parthenogenetically (Olmi 1994).

**Figure 1**

Frequency of the 15 most abundant species in the investigation. The upper bar represents the remaining 12 less abundant species.

This behaviour may be more common in *A. exiguum* which therefore produces relatively more females than in *A. pubicorne*.

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SAMMENDRAG

Norges Aculeata. 2. Dryinidae og Embolemidae (Hym., Apocrita).

Denne undersøkelsen over Norges 28 arter av Dryinidae og Embolemidae baserer seg på 1188 individer. 108 regionsfunn er angitt. Artenes biologi og verdensutbredelse er kun kort angitt.

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Notes on Norwegian Coleoptera. 3

Bjørn A. Sagvolden & Lars Ove Hansen

Sagvolden, B.A. & Hansen, L.O. 1996. Notes on Norwegian Coleoptera. 3. - Fauna norv. Ser. B 43: 89–94.

The following six species of Coleoptera are recorded from Norway for the first time: *Amara gebleri* Dejean, 1831, *Demetrias imperialis* (Germar, 1824) (Carabidae), *Euconnus pragensis* (Machulka, 1923) (Scydmaenidae), *Gabrius tirolensis* (Luze, 1903) (Staphylinidae), *Apion meieri* Desbrochers de Loges, 1901 and *A. tenue* Kirby, 1808 (Apionidae). New records of *Micropeplus fulvus* Erichson, 1840 (Staphylinidae), *Oedemera femorata* (Scopoli, 1763) (Oedemeridae) and *Allandrus undulatus* (Panzer, 1795) (Anthribidae) are also presented. An examination of the Norwegian material of *Nevraphes talparum* Lokay, 1920 (Scydmaenidae) showed that all the specimens were misidentifications of *N. ruthenus* Machulka, 1926. *N. talparum* is thus replaced by *N. ruthenus* in the Norwegian list.

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INTRODUCTION

The present account reports six species of Coleoptera new to Norway, as well as some other noteworthy records. Two of the “new” species have hitherto been confused with closely related species. The nomenclature follows Silfverberg (1992b), the format for the faunistic records follows Økland (1981) and the European Invertebrate Survey grids (EIS) are given in accordance with Økland (1977). The following abbreviations are used in the text: BAS = Bjørn A. Sagvolden; LOH = Lars Ove Hansen; CN = car-net (modified model after Kronblad & Lundberg 1978); MT = Malaise-trap; ZMO = Zoological Museum, University of Oslo; ZMB = Zoological Museum, University of Bergen.

THE RECORDS

Carabidae

Amara gebleri Dejean, 1831

Norwegian records of the well-known carabid *A. aulica* (Panzer, 1797) are given by Strand (1960). Recent-

ly, the closely related *A. gebleri* (= *A. helleri* Gredler, 1868) has been recorded from Poland, Germany, Sweden, Finland and Denmark (Lompe 1989, Silfverberg 1992a, b, Ljungberg 1994). This initiated an examination of the available Norwegian material, which revealed several specimens of *A. gebleri* (see Table 1). However, records of *A. aulica* are still present from the following regions: Ø, AK, OS, ON, BØ, BV, VE, TEY, TEI, AAY, AAI, VAY, RY, RI, HOY, HOI, SFY, SFI, MRY, MRI, STY, STI, NTI, NSY, NSI, NNV and TRY. Figure 1 shows the distribution of the two species in Norway. *A. aulica* is present north to BØ i Vesterålen and Harstad (TRY), while *A. gebleri* is so far restricted to SE Norway. *A. aulica* is obviously the most abundant of the two carabids.

Demetrias imperialis (Germar, 1824)

A ♂ was sifted from decaying reeds of *Typha* from a floating peat at lake Arekilen, Ø, Hvaler: Kjærkøy (EIS 12), 1 April 1990. On a visit 19 May the same year several specimens were found numerous in reeds of *Typha latifolia* at a nearby pond (leg. & coll. S. Ligaard & BAS). *D. imperialis* is previously recorded from Sweden, Finland and Denmark (Silfverberg 1992b). According to Lindroth (1986) the species is

Table 1. The Norwegian records of *Amara gebleri*. Abbreviations: BAS = Bjørn A. Sagvolden; ZMB = Zoological Museum, University of Bergen; ZMO = Zoological Museum, University of Oslo; TM = Tromsø Museum; VMT = The Royal Norwegian Society of Sciences, The Museum, Trondheim.

Region	Municipality	Locality	EIS	Date	N	Leg. (ex coll.)
Ø	Halden	Remmendalen	20	2 August 1983	1	O. Hanssen (Priv.)
Ø	Moss	Ramberg, Jeløy	19	23 July 1985	1	BAS (Priv.)
AK	Ås	Årungen	28	5 August 1983	1	O. Hanssen (Priv.)
AK	Ås	Frydenhaug	28		1	A. Andersen (F. Ødegaard)
AK	Oslo	V.Aker	28	1907	1	I. Tambs Lyche (ZMB)
AK	Oslo	"Kristiania"	28		1	T. Münster (ZMO)
AK	Asker	Semsvannet	28	12 June 1985	1	S.O. Hansen (Priv.)
HES	Sør-Odal	"Odalen"	37		1	W.M. Schøyen (ZMO)
HEN	Elverum	Grundset	55		1	J.H.S. Siebke (ZMO)
OS	Lunner	Roa	36	23 May 1910	2	L.R. Natvig (ZMO)
ON	Sel	Laugård	71		1	W.M. Schøyen (ZMO)
BØ	Kongsberg	Kongsberg	27		1	T. Münster (ZMO)
BØ	Lier	Lier	28	29 July 1896	1	A. Wollebæk (ZMO)
BØ	Drammen	Drammen	28		1	R. Collet (ZMO)
BØ	Øvre-Eiker	Hokksund	28	1 May 1931	1	N. Snell-Larsen (ZMO)
BV	Rollag	Rollag	35	1 June 1984	1	BAS (VMT)
BV	Rollag	Rollag	35	2 August 1985	1	BAS (TM)
BV	Rollag	Bergan, Rollag	35	20 August 1994	1	BAS (Priv.)
VE	Sandefjord	Sandefjord	19	May 1954	1	A. Vik (Priv.)
VE	Sandefjord	Sandefjord	19	July 1972	1	A. Vik (Priv.)
VE	Larvik	Larvik	19	25 June 1911	1	L.R. Natvig (ZMO)
VE	Larvik	Larvik	19	8 July 1911	1	L.R. Natvig (ZMO)
VE	Larvik	Pauler	19	6 July 1983	1	B. Borgersen (J.A. Stenløkk)
VE	Larvik	Fare, Hedrum	19	1 September 1983	1	O. Hanssen (Priv.)
VE	Larvik	Roppestad	19	10 June 1984	1	J.A. Stenløkk (Priv.)
VE	Larvik	Gjønnesvatn	19	8 June 1986	1	S.O. Hansen (Priv.)
VE	Larvik	Nanset	19	28 May 1987	5	S.O. Hansen (Priv.)
VE	Larvik	Mølen	11	18 August 1990	1	S.O. Hansen (Priv.)
VE	Larvik	Bommestad	19	27 July 1993	1	S.O. Hansen (Priv.)
VE	Larvik	Risøy, Stavern	19	13 August 1993	1	S. Ligaard (Priv.)
VE	Tjøme	Eidene	19	28 July 1963	1	A. Fjellberg (ZMB)
VE	Nøtterøy	Ø.-Bolerne	19	29 August 1991	1	S.O. Hansen (Priv.)
TEY	Kragerø	Stråholmen	11	1 May 1992	1	S.O. Hansen (Priv.)
TEI	Bø	Folkestad	18		1	F. Ødegaard (Priv.)
TEI	Notodden	Elgsjø	27	20 August 1989	1	BAS (Priv.)
TEI	Tinn	Håkanes	26	19 May 1984	1	BAS (Priv.)
TEI	Tinn	Håkanes	26	26 May 1995	5	BAS (Priv.)
AAAY	Moland	Eydehavn	6	15 May 1978	1	BAS (Priv.)
AAAY	Risør	Laget	11	25 July 1985	1	J.A. Stenløkk (Priv.)
RY	Klepp	"Jæderen"	3/??		1	N.G. Moe (ZMB)

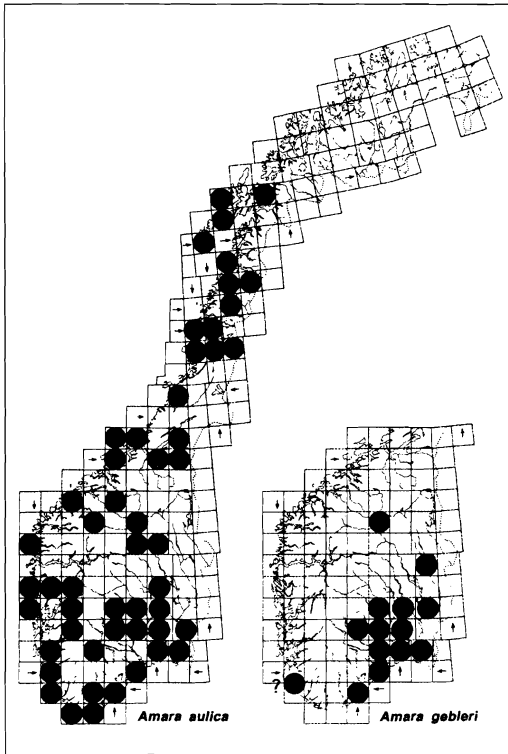


Figure 1
The distribution of *Amara sulica* and *A. gebleri* in Norway.

hygrophilous and may be found on clayey or muddy shores of eutrophic lakes with a rich and tall vegetation, preferably of *Phragmites* and *Typha*.

Scydmaenidae

Nevraphes ruthenus Machulka, 1926

(= *N. talparum* Lokay, 1920 misident.)

Norwegian records of *N. talparum* Lokay, 1920 are previously given by Strand (1937, 1960). However, an examination of the Norwegian material showed that this were all misidentified *N. ruthenus*. The records are: **AK**, Oslo: Røa (EIS 28), 1♂ 25 April 1950, 1 pair 8 May 1954; Asker: Hvalstad (EIS 28), 1 spm. 14 Sept. 1936, 1 spm. 28 Aug. 1935, all leg. A. Strand (ZMB); **BØ**, Røyken: "Røyken" (EIS 28), 1♂ in cellar, leg. R. Collett (ZMO); **VE**, Stokke: Brustad (EIS 19), 1♀ 20 July 1993, CN (leg. & coll. BAS). *N. talparum*

is thus replaced by *N. ruthenus* in the Norwegian list. It is previously recorded from Denmark and Sweden, but not Finland (Silfverberg 1992b, Gustafsson 1995). All the N European specimens of the hitherto regarded *N. talparum* are most probably misidentifications of *N. ruthenus* (Michael Hansen pers.com.). *N. talparum* is probably a more southerly species.

Euconnus pragensis (Machulka, 1923)

BV, Rollag: Rollag 2♀ 10 May 1985 (BAS leg. & coll.); sifted from lower parts of a *Formica* ant-hill. Previously recorded from Sweden north to Nb (Norr-botten) and Finland, but not Denmark (Silfverberg 1992b, Gustafsson 1995). According to Franz (1971) the species is myrmecophilous and lives in association with certain species of *Lasius*. However, association with *Formica* spp. has been observed in Sweden (Stig Lundberg pers.com.).

Staphylinidae

Gabrius tirolensis (Luze, 1903)

BV, Rollag: Rollag-Veggli (EIS 35), 1 pair 23 July 1992, 1♂ 12 May 1993 and 1 pair 7 July 1993, Rollag-Kjømme (EIS 27), 5 spm. 5–23 June 1995, all CN (leg. BAS, coll. BAS & ZMO). Taken swarming together with the closely related *G. astutooides* (Strand, 1946) right before sundown. The records were done at several sites along a road in a farmland area with scattered pineforest about 200–500 meters from the river Numedalslågen. *G. tirolensis* is recorded from Sweden (Sk), but not Finland and Denmark (Silfverberg 1992b, Gustafsson 1995). In C Europe present in the Alps and the Tatras (Lohse 1964).

Micropeplus fulvus Erichson, 1840

Ø, Eidsberg: Herland, Baggetorp (EIS 29), 2♂♂ and 1♀ were taken by sifting sticky compost, 25 June 1995 (leg. & coll. BAS). Previously recorded once in Norway: **BØ**, Kongsberg: Hvitvingfoss (Sagvolden & Hansen 1993).

Oedemeridae

Oedemera femorata (Scopoli, 1763)

TEI, Seljord: Blika (EIS 26) 1♂ and 2♀ 5–8 Aug.

1993 (leg. H. Elven, coll. BAS & ZMO). Previously recorded once in Norway: **MRI**, Sunndalen (EIS 78) by Dragseth & Hanssen (1981), who proposed a probable relict W Norwegian population. According to Oddvar Hanssen (pers. comm.) the species is quite common at this particular locality. The Norwegian localities are both warm southfaced slopes.

Anthribidae

Allandrus undulatus (Panzer, 1795)

BØ, Drammen: Underlia (EIS 28), 1 pair May 1994, 1 ♀ July 1994, MT in southfaced slope, (Leg. LOH, coll. BAS). Previously recorded once in Norway from **AK**, Fet: Fetsund (EIS 29), August 1987 (Hansen 1988).

Apionidae

Apion meieri Desbrochers de Loges, 1901

Norwegian records of the weevil *A. (Catapion) seniculus* Kirby, 1808 are given by Strand (1960). According to Leiler (1988), Dieckmann (1989) and Gønget (1992) the N European *seniculus* sensu auctt. also covers the closely related *A. meieri*. An examination of the available Norwegian collections uncovered several *meieri* (see **Table 2**). Records of *A. seniculus* are still present from the following regions: Ø, AK, OS, BØ, VE, TEY, AAY. **Figure 2** shows the distribution of the two species in Norway. Both have a main distribution around the Oslofjord, but *A. seniculus* seems to be more common. The larvae of both are associated with *Trifolium*, but *A. meieri* feeds on *T. hybridum*, while *A. seniculus* may accept both *T. pratense*, *T. medium* and *T. fragiferum* (Dieckmann 1989, Gønget 1992).

Apion tenue Kirby, 1808

Ø, Hvaler: Spjørøy, Spjør (EIS 12), 1 pair 10 May 1986 (leg. & coll. BAS). Sweep-netted on *Trifolium* sp.). Previously recorded from Sweden and Denmark, but not Finland (Silfverberg 1992b). The larvae develop in stems of certain *Medicago*-species, and occur sometimes as a pest in lucerne fields in C Europe (Lohse 1981).

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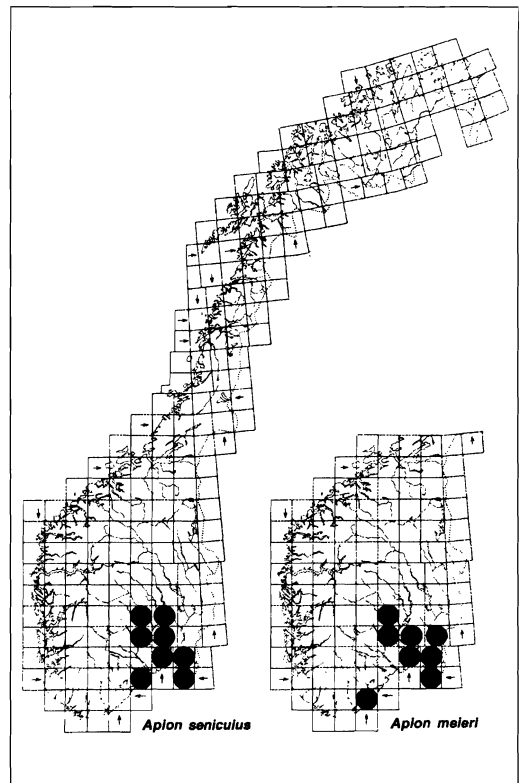


Figure 2

The distribution of *Apion seniculus* and *A. meieri* in Norway.

Table 2. The Norwegian records of *Apion meieri*. Abbreviations: BAS = Bjørn A. Sagvolden; NISK = Norwegian Forest Research Institute, Ås; ZMB = Zoological Museum, University of Bergen; * = netted on *Trifolium hybridum*.

Region	Municipality	Locality	EIS	Date	N	Leg. (coll.)
Ø	Hvaler	Svanekil	12	5 July 1980	1	T. Kvamme (NISK)
Ø	Våler	Svinndal	20	10 September 1985	1	BAS (Priv.)
Ø	Råde	Huseby	20	1 June 1981	1	T. Kvamme (NISK)
Ø	Råde	Åven	19	31 July 1994	1	S. Ligaard (Priv.)
Ø	Råde	Åven	19	20 June 1995	4*	S. Ligaard (Priv.)
Ø	Eidsberg	Herland	29	24 July 1995	6*	BAS (Priv.)
AK	Oppegård	Vinterbro	28	15 May 1990	1	S. Ligaard (Priv.)
AK	Frogn	Frogn	28	10 June 1983	1	O. Hanssen (Priv.)
AK	Frogn	Fron	28	29 August 1979	1	T. Kvamme (NISK)
AK	Oslo	Østensjøvann	28	4 August 1958	1	A. Strand (ZMB)
AK	Bærum	Ostøya	28	1 August 1981	1	T. Kvamme (NISK)
AK	Bærum	Brønnøya	28	1 June 1980	1	T. Kvamme (NISK)
AK	Bærum	Snarøya	28	30 June 1987	2	S.O. Hansen (Priv.)
AK	Bærum	Snarøya	28	27 August 1993	2	S.O. Hansen (Priv.)
AK	Bærum	Snarøya	28	27 June 1995	18*	BAS (Priv.)
BØ	Kongsberg	Hedenstad	27	19 July 1995	12*	BAS (Priv.)
BØ	Kongsberg	Kongsberg	27	8 July 1995	1*	BAS (Priv.)
BØ	Modum	Åmodt	28	21 June 1989	1	F. Ødegaard (Priv.)
BØ	Øvre-Eiker	Darbu	27	8 July 1995	3*	BAS (Priv.)
BØ	Nedre-Eiker	Miletjern	28	13 June 1992	1	BAS (Priv.)
BØ	Nedre-Eiker	Miletjern	28	8 July 1995	6*	BAS (Priv.)
BØ	Drammen	Underlia	28	8 July 1995	1*	BAS (Priv.)
BV	Rollag	Rollag	35	27 June 1989	1	BAS (Priv.)
VE	Tønsberg	Tønsberg	19	6 September 1992	1	A. Fjellberg (Priv.)
VE	Tjøme	Ormelet	19	28 June 1995	49*	A. Fjellberg (BAS)
VE	Tjøme	Sønstegård	19	16 September 1992	1	A. Fjellberg (BAS)
VE	Larvik	Mølen	19	1 May 1993	1	F. Ødegaard (Priv.)
VE	Larvik	Risøya	19	1 June 1993	1	F. Ødegaard (Priv.)
VE	Sandefjord	Sandar	19	16 May 1964	1	A. Vik (Priv.)
AAV	Arendal	Botne, Tromøy	6	9 June 1988	1	F. Ødegaard (Priv.)

SAMMENDRAG

Notiser vedrørende norske biller. 3

Følgende seks arter av Coleoptera rapporteres fra Norge for første gang: *Amara gebleri* Dejean, 1831, *Demetrias imperialis* (Germar, 1824) (Carabidae), *Euconnus pragensis* (Machulka, 1923) (Scydmaenidae), *Gabrius tirolensis* (Luze, 1903) (Staphylinidae), *Apion meieri* Desbrochers de Loges, 1901 og *A. tenue* Kirby, 1808 (Apionidae). Nye funn av *Micropeplus fulvus* Erichson, 1840 (Staphylinidae), *Oedemera femorata* (Scopoli, 1763) (Oedemeridae) and *Allandrus undulatus* (Pan-

zer, 1795) (Anthribidae) presenteres også. Det norske materialet av *Nevraphes talparum* Lokay, 1920 (Scydmaenidae) viste seg alle å være feilbestemmelser av *N. ruthenus* Machulka, 1926. Denne bytter derfor plass med *N. talparum* i den norske lista.

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Notes on thrips (Thysanoptera) in Iceland

Sverre Kobro

Kobro, S. 1996. Notes on thrips (Thysanoptera) in Iceland. - Fauna norv. Ser. B 43: 95-97.

During a short stay in Iceland some thrips were collected. Three species were identified: *Apterothrips secticornis*, *Thrips vulgatissimus* and *Thrips trehernei*. *Thrips trehernei* were registered for the first time in Iceland, though it was common in *Taraxacum* sp.

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INTRODUCTION

Thysanoptera in Iceland are little investigated. Maltbæk (1938) reported only six species: *Aptinothrips rufus* (Gmelin) (f. *connaticornis* Uzel and f. *stylifera* Trybom), *Apterothrips secticornis* (Trybom), *Taeniothrips pini* (Uzel), *Taeniothrips inconsequens* (Uzel), *Thrips vulgatissimus* (Haliday) and *Thrips tabaci* (Lindeman).

Mound et al. (1976) noted *A. rufus* as two distinct species, *Aptinothrips rufus* (Haliday) and *Aptinothrips stylifer* (Trybom).

Cederholm in Lindroth et al. (1973) noted *T. pini* (Uzel) and *Th. vulgatissimus* (Haliday) as the same species and with *Taeniothrips atratus* (Haliday) as the valid name.

Hagerup (1950) reported *Ceratothrips ericae* (Haliday) found in abundance in Iceland, but without further specification. This information was not confirmed by Olafsson (1991), however, he stated that two other thrips species were found in Iceland: *Parthenothrips dracaenae* (Heeger) and *Haplothrips aculeatus* (Fabricius).

During a short visit to Iceland in 1995 I collected some thrips. Three species were identified of which one is reported here as new to Iceland.

MATERIALS AND METHODS

Thrips were collected on monocotyledonous and dicotyledonous plant material in the period 25 June to 1 July 1995. If plants were small, the whole plant except the root was collected. If plants were large, only smaller parts such as flowers, branches or shoots were collected. A handful of plant material was collected and kept in plastic bags. Water with a drop of detergent was added to each sample. After at least one hour, the plastic bags were shaken gently, and the plant material was removed while carefully shaking it. After filtering the remainder through a nylon cloth, thrips and plant debris were transferred to 60 % alcohol, so that the thrips could be sorted for storage in 60 % alcohol with acetic acid and glycerol and later identification (Olsen 1982). Up to twenty specimens per sample were kept.

The identification keys used were from Mound et al. (1976) and Priesner (1928). Nomenclature follows Mound et al. (1976) mainly.

RESULTS

Three species were collected, *A.secticornis*, *Th. vulgatissimus* and *Thrips trehernei* (Priesner 1926, syn. *Thrips hukkineni* Priesner 1937) (Table 1).

Table 1. New records of Thysanoptera in Iceland.

<i>Apterothrips secticornis</i> (Trybom)		
Hveragerdi	EIS 587	Amessysla
Reykjavik	EIS 593	
Strokkur	EIS 594	Amessysla
Skorradalsvann	EIS 603	Borgarfjordarsysla
<i>Thrips vulgatissimus</i> (Haliday)		
Hveragerdi	EIS 587	Amessysla
Reykjavik	EIS 593	
Strokkur	EIS 594	Amessysla
Fludir	EIS 594	«
Gullfoss	EIS 594	«
Borgarnes	EIS 603	Borgarfjordarsysla
Skorradalsvann	EIS 603	«
Godafoss	EIS 629	S-Thingeyjarsysla
Myvann	EIS 630	«
<i>Thrips trehernei</i> (Priesner)		
Hveragerdi	EIS 587	Amessysla
Selfoss	EIS 588	«
Reykjavik	EIS 593	
Fludir	EIS 594	Amessysla
Gullfoss	EIS 594	«
Borgarnes	EIS 603	Borgarfjordarsysla
Skorradalsvann	EIS 603	«
Akureyri	EIS 628	Eyafjordarsysla

Of the 97 plant samples collected, 41 contained adult thrips. Although thrips were found on 18 plant species, only *Taraxacum* sp., *Salix* sp., *Caltha palustris* and *Anthriscus sylvestris* contained larger amounts of thrips (5-100 specimens per sample). Nymphs were registered from *Taraxacum* sp., *Salix* sp. and *Geum rivale*. Only female adults were registered. 76 female adults were prepared for identification.

Four specimens of *A. secticornis* were found on four different dicotyledons. *Th. vulgatissimus* was found in 21 samples from 12 different plant species, without showing clear preferences. *Th. trehernei* was found in 18 samples from 9 different plant species, and was clearly most numerous in *Taraxacum* sp.

DISCUSSION

A. secticornis which lives on grasses (Mound et al. 1976), did not show plant preference in this study.

Th. vulgatissimus occurred in many samples, but with a limited number of specimens per sample. This is very consistent with *Th. vulgatissimus* being extremely polyphagous without host specificity (Olsen 1982).

Th. trehernei, on the other hand, seems to be associated with *Taraxacum* sp. The species was found in great numbers per sample of this plant and usually only one or two specimens were found per sample of other plants. The same distribution pattern is found in Britain (Pitkin 1976).

Cederholm in Lindroth et al. (1973) suggested that *T. atratus* should be the valid name for *T. pini* and *Th. vulgatissimus*. According to Mound et al. (1976) and Priesner (1928) these are three different species and Mound et al. (1976) placed them in the same genus, *Thrips*. At least *Th. vulgatissimus* and *Th. atratus* are easy to distinguish by different number of setae in the wings and by different coloration of the antennae.

Th. trehernei is not previously registered in Iceland. Although the Icelandic thrips fauna is little investigated, it is striking that this species, which is so numerous in this study, should have been overlooked earlier. One explanation could be that the species has immigrated recently. Another explanation might be that the population size of *Th. trehernei* varies over years, and that my visit to Iceland happened to coincide with a population peak. In any case, a few days of sampling giving a new species, indicates that further study of the Icelandic thrips fauna is needed.

ACKNOWLEDGEMENTS

I am very grateful to Sigurgeir Olafsson for providing me with a binocular microscope during my stay in Reykjavik, making this study possible. I also wish to thank Richard zur Strassen and Anders J. Olsen for confirming identifications of the three species.

SAMMENDRAG

Opplysninger om trips (Thysanoptera) i Island

Under et kort opphold i Island samlet jeg noe trips. Tre arter ble identifisert: *Apterothrips secticornis*, *Thrips vulgatissimus* og *Thrips trehernei*. Det er første gang *Th. trehernei* er registrert i Island, men den var vanlig i løvetann.

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Short communications

Two species of Psyllidae (Homoptera) new to Norway

Lars Ove Hansen

The two species of Psyllidae *Craspedolepta campestrella* Ossiannilsson, 1987 and *Cacopsylla ulmi* (Förster, 1848) are recorded for the first time in Norway. Biology and distribution of the species are briefly discussed.

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INTRODUCTION

The Norwegian psyllid fauna is far from fully investigated, and "new" species for Norway are still encountered. This article deals with two species recently found by the author in SE Norway. These finds raises the number of Norwegian psyllid species to 72 (cf. Ossiannilsson 1992). The localities are given in accordance with Økland (1981). The material is deposited at the Zoological museum of Oslo.

THE SPECIES

Craspedolepta campestrella Ossiannilsson, 1987

More than a hundred specimens of this species emerged from about 15 branches of *Artemisia campestris* brought indoors on 4 June 1995 for the purpose of rearing Lepidoptera. The plants were picked at BØ, Hurum: Verket (EIS 28) on sandy ground. The emergence started about 13 June and lasted for about eight days. On 19 June 1995 some branches of *A. campestris* were picked at Ø, Moss: Jeløy, Alby (EIS 19) and from these about ten specimens of *C. campestrella* emerged. This recently described species is, according to Ossiannilsson (1992), solely associated with *A. campestris*, which, in Norway, occurs only around the Oslofjord, north to Vestre Slidre (ON) and Ringsaker (HES), and along the coast to Mandal (VAY) (Lid &

Lid 1994). The psyllid has most likely the same distribution. The species has only been recorded from S Sweden (Sk., Bl., Hall., Öl., Gtl.), Denmark (EJ, F, LFM, NEZ) and the former Czechoslovakia (Moravia) (Ossiannilsson 1992), so the present records is certainly a new northern limit for the species.

Cacopsylla ulmi (Förster, 1848)

This species had a mass occurrence at a European white elm (*Ulmus laevis*) in the Botanical garden in AK, Oslo: Tøyen (EIS 28) on 3 June 1993. Ten days later the mass occurrence had ceased and no specimens could be traced. *C. ulmi* is in N Europe associated with certain elm species as Smooth elm (*U. carpiniifolia*) and European white elm (*U. laevis*), but probably not with the Wych elm (*U. glabra*) (Ossiannilsson 1992). Of these *Ulmus* spp. only *U. glabra* occurs naturally in Norway, while the others are restricted to parks and gardens. *C. ulmi* has been found in S Sweden (Sk., Hall., Öl., Gtl., Upl.), S Finland (Ab, N, Ta), Denmark (NEZ), C Europe and eastwards to Kazakhstan (Ossiannilsson 1992).

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SAMMENDRAG

To nye arter Psyllidae (Homoptera) for Norge.

Psyllidae artene *Craspedolepta campestrella* Ossiannilsson, 1987 og *Cacopsylla ulmi* (Förster, 1848) rapporteres her for første gang fra Norge. Biologi og utbredelse blir kort kommentert.

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Tetanocera freyi Stackelberg, 1963 (Diptera, Sciomyzidae) new to Norway

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Tetanocera freyi Stackelberg, 1963 is reported new to Norway collected at the small lake Sagtjernet in Elverum, Hedmark province, southern part. One male specimen was netted close to the edge of the lake Sagtjernet on 16-17 June 1996. A list of Sciomyzidae from the same locality is given.

53 species of Sciomyzidae has hitherto been recorded from Norway (Greve, 1993). Rozkošný (1984) listed 46 species of Sciomyzidae from Norway and 83 species from Fennoscandia and Denmark. For additional information about species recorded new to Norway see Greve & Økland (1989), Greve (1990, 1991), Greve & Midtgaard (1992) and Greve & Olsen (1993).

During the two afternoons of 16 and 17 June 1996 the lake Sagtjernet, north of Elverum center, was visited with a sweepnet, the material from both days kept together. The original vegetation along the edges of Sagtjernet is mostly destroyed, part of the lake is today a bathing area, gardens of private homes are adjoining as well as school-lawns and roads for walking and bicycling. In some parts, however, one can collect in the original vegetation which mostly is bog

One male *Tetanocera freyi* Stackelberg 1963 was netted together with eight other species of the family Sciomyzidae. According to Rozkošný (1984). *T. freyi* is very similar to another *Tetanocera* species: *T. silvatica* Meigen, 1830 which is common in Fennoscandia. *T. freyi*, on the contrary, is only recorded from few localities in Fennoscandia and Denmark

Both species have anterior margin of frons, the mid-frontal stripe and the orbital stripes shining. A character for dividing the two species is the occipital spot

which in *T. freyi* has a brown bandshaped, median part between the whitish pruinose lateral patches, and brown even in the basal part. In *T. silvatica* only the upper part of the occipital spot is brown, of subtriangular form, and not band shaped. The male genitalia (gonostylus) is strikingly different, simply pointed apically in lateral view in *T. freyi* and distinctly bifid at tip in *T. silvatica* see Rozkošný (1984).

The otherwise nearest locality of *T. freyi* in the Fennoscandia and Denmark is in Sweden, Sunderbyn in the province Nordbotten. The species has been recorded from Ab and LKE in Finland and from some places in Denmark. Outside this area *T. freyi* is holarctic in distribution with records in central Europe as well as from Alaska and Canada (Knutson, 1981). The biology of *T. freyi* is virtually unknown. It is an interesting addition to the Norwegian fauna. Including *T. freyi* there are 54 species of the family Sciomyzidae recorded from Norway.

The following eight Sciomyzidae species were also collected near Sagtjernet Sciomyzidae species: *Elgiva cucularia* (L., 1767) 4 males; *Pherbellia schoenherri* (Fallèn, 1826) 3 males 1 female; *Pteromicra glabricula* (Fallèn, 1820) 1 female; *Renocera striata* (Meigen, 1830) 3 males; *Sepedon spegea* (Fabricius, 1775) 5 males 5 females; *Tetanocera arrogans* Meigen, 1830 1 male; *T. ferruginea* Fallèn, 1820 1 male; *T. fuscineris* Fallèn, 1820 1 male; and some *Tetanocera* sp. females. One species, *S. spegea*, has earlier been recorded from southern Hedmark province, the seven other species are new to HES. In addition to the record of *Pherbellia schoenherri* there is two additional unpublished records of *P. schoenherri* from HES in the collections of Zoological Museum, Univ. of Bergen: Ringsaker community, Furnes, Sandvold, 10 July 1991 1 male (A. 21883) and 23 May 1995 1 female (A. 24051) coll. G.W. Bakkerud.

Two of the seven species are fairly rare in Norway: *Pteromicra glabricula* is known from ON, VE and NSI. In addition to the new record from Sagtjernet there is also an unpublished record in the collections in Zoological Museum, Univ. Bergen from VAY Flekkefjord, Hydra, Dragøy MF 8-15 August 1982 1 male coll. A.J. Nilsen. *Renocera striata* is widely distributed species in Norway, but fairly rare Greve & Økland (1989)

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I wish to thank Prof. Dr. R. Rozkošný, Masaryk University Brno, Czech Republic, who confirmed the determination of *T. freyi*.

SAMMENDRAG

Tetanocera freyi Stackelberg, 1963 (Diptera, Sciomyzidae), ny art for Norge

En hann av arten *Tetanocera freyi* Stackelberg, 1963, fluefamilien Sciomyzidae, ble fanget med insekthov ved Sagtjernet, Elverum kommune HES 16 og 17 Juni 1996. Bestemmelsen er bekreftet av Prof. R. Rozkošný, Masaryk Universitet, Brno, Tsjekkia. Sagtjernet ligger i nordre del av Elverum. Rundt tjernet er det dels parkområder med gressmarker, opparbeidet badebasseng, private hager etc., men deler av tjernet har bredder med opprinnelig vegetasjon - tildels myr. Åtte andre arter Sciomyzidae ble også fanget her: *Elgiva cucularia*, *Pherbellia schoenherri*, *Pteromicra glabricula*, *Renocera striata*, *Sepedon sphegea*, *Tetanocera arrogans*, *T. ferruginea* og *T. fuscinervis*. Alle utenom *S. sphegea* er nye for HES. *P. glabricula* og *R. striata* som er ganske sjeldne arter i Norge. Lokaliteten Sagtjernet virker rik, er lett tilgjengelig og vel verd et besøk av andre!

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Snutebillen *Peritelus hirticornis* Hbst. ny art for Norge

Karl Erik Zachariassen

Karl Erik Zachariassen, Zoologisk institutt, Norges Teknisk-Naturvitenskapelig Universitet, N-7055 Trondheim, Norway.

The curculionid beetle *Peritelus hirticornis* Hbst. is reported found in Norway for the first time. One specimen was found at Langøya in the inner Oslofjord on 30th May 1994. The beetle was caught by the use of an insect net in the vegetation.

Snutebilleslekten *Peritelus* står nær slekten *Otiorynchus* og regnes av mange forfattere som en underslekt av denne. *P. hirticornis* skiller seg fra *Otiorynchus* artene ved sine betydelig smalere dekkvinger.

P. hirticornis er utbredt langs den svenske vestkysten opp til Båhuslän og på Jylland og Sjælland i Danmark (Lindroth 1960). Hansen (1965) oppgir at arten lever på ask og osp.

Den 30.5. 1994 fant forfatteren et eksemplar av *P. hirticornis* på Langøya i indre Oslofjord. Dyret ble tatt ved håving i blandet buskvegetasjon, og det er ikke mulig å si hvilket treslag den ble håvet fra.

Billen er 5.7 mm lang fra dekkvingespiss til øynenes forkant. Eksemplaret befinner seg i forfatterens samling.

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Calyciphora albodactylus (Fabricius, 1794) (Lep., Pterophoridae) in Norway

Anders Bjørnstad & Leif Aarvik

The plume moth *Calyciphora albodactylus* was found for the first time in Telemark, South Norway in 1994. Notes on biology, distinguishing characters and distribution are given.

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On 26 July 1994 we collected numerous specimens of the plume moth *Calyciphora albodactylus* (Fabricius, 1794) at TEY, Drangedal: Henneseid (EIS 11). Additional specimens were collected on 8 Aug. by Kai Berggren and Kai Myhr. In the evening the moths were easily disturbed from the vegetation and netted. They were resting on leaves of the thistle *Cirsium helenioides* and other plants growing at the site. On the leaves of this thistle conspicuous signs of attack by some insect larva were present (Fig. 3). Subsequent checking of literature confirmed that the attack was caused by the larva of *Calyciphora albodactylus*. The larva causes characteristic window-like marks in the leaves, leaving the upper epidermis intact and rolling up the underside felt in a characteristic way. The biology of the species was described in detail by Kyrki & Karvonen (1985) who discovered the species in southeastern Finland and reared it. The sluggish larvae are found on the underside of the leaves or on the stem. They feed from the underside of the leaves during spring and early summer. The larva is said to pupate under the leaves of the food plant, but this was not, in spite of searching, confirmed by the Finnish lepidopterists. In southern Europe the species has two generations a year, in central and northern Europe only one.

The Norwegian locality at Henneseid in Drangedal is on a south-facing slope falling away down to the lake Tokke ca. 90 m a.s.l. *Cirsium helenioides* is the dominating species along a small drainage line down this slope, forming a dense population for a distance of ca. 50 m. Ori-

nally the area was covered with mixed deciduous/conifer forest, but has since long been managed through lumbering activities. The local name for the exact locality, Røsvikskåtet, indicates a passage-way for timber transport down to the lake for long periods. Old remains of small timbering shacks nearby confirms this. The forest on the locality was last removed 1987-8. Examination of a *C. helenioides* stand 1/2 km nearby showed no signs of attack from *C. albodactylus*. In 1995 a more systematic search for *C. albodactylus* was carried out. Fresh larval attacks on the food plant were found at the original site and three more localities further east and northeast, the furthest lying 9 km E of the 1994 locality:

TEY, Drangedal: At the western slope of Bjordamheia. 160 m.a.s.l. 29 Jul. 1995.

TEY, Drangedal: Southern end of Sandneslangen. 70 m.a.s.l. 12. Jul. 1995.

TEY, Bamble: Western end of Langen (Langsenden). 80 m.a.s.l. 24. Jul. 1995.

All the new localities are situated within the EIS 11 grid square and have ecologically much in common with the locality at Røsvikskåtet: Relatively large populations of the food plant on south- to southwest-facing slopes with thermophilous indicators like *Geranium sanguineum* and *Hypochoeris radicata*. Imagines started flying simultaneously at Sandneslangen and at the "old" site on 29 Jul. 1995.

In the literature, e.g. Gielis 1993, Kyrki & Karvonen 1985, Svensson et al. 1994, this species is known under the name *Calyciphora xerodactylus* (Zeller, 1841), or in the combination *Pterophorus xerodactylus* Zeller, 1841. Karsholt & Gielis (1995) introduced the name *Pterophorus albodactylus* Fabricius, 1794 as the senior synonym of *Pterophorus xerodactylus* Zeller, 1841. Thus the current valid combination is *Calyciphora albodactylus* (Fabricius, 1794).

C. albodactylus is the only northern European representative of the genus *Calyciphora* Kasy, 1960, which contains 12 mainly Palearctic species (Gielis 1993). Previously they were included in the large genus *Pterophorus* Schäffer, 1766, which has now been split into five genera. In Norway there are two additional *Pterophorus s.lat.* species, *P. pentadactyla* (Linnaeus, 1758) and *Merrifeldia baliodactylus* (Zeller, 1841).

Together with *C. albodactylus* the three species are separated from other Norwegian species in related genera through their deeply cleft forewings with extremely narrow, curved lobes. *P. pentadactyla* (Linnaeus, 1758) is a large species with silvery white unmarked wings, very different from the two other mainly yellow-coloured species. *M. baliodactylus* (Zeller, 1841) (Fig. 2) differs from *C. albodactylus* (Fig. 1) by its much darker fringes, particularly of the hindwings. *C. albodactylus* has two small, dark spots in the forewing disc not present in *baliodactylus*. The genitalia of *albodactylus* are illustrated by Hannemann (1977) as *Pterophorus siculus*.

In the past *C. albodactylus* was confused with *Calyciphora xanthodactyla* (Treitschke, 1833) which is a central and south European species externally inseparable from *albodactylus*. Due to the confusion with *xanthodactyla*, it is difficult to tell the exact range of the species. According to Hannemann (1977) it is distributed in south and central Europe. In Sweden it is known from the two Baltic sea islands, Öland and Gotland (Svensson et al. 1994). The Finnish locality is Imatra in the district Etelä-Karjala (Kyrki & Karvonen 1985) which is situated in the extreme south eastern corner of the country.

Kyrki & Karvonen (op.cit.) described *Cirsium helenioides* as a new food plant for *C. albodactylus*. The Norwegian find confirms this plant as the preferred species in the outer, northernmost fringes of its distribution range. Further south other thistle-like Asteraceae (*Carlina*, *Serratula* et cetera) have been given as the food plant. But the mentioned earlier confusion with *C. xanthodactyla* requires this information to be reexamined.

Although the new Norwegian records represent more or less thermophilous localities, it is difficult to imagine what the Norwegian sites ecologically should have in common with the xerophilous and climatically very different conditions of the nearest occurrences on Öland and Gotland. The new localities are situated more than 500 km WNW of the Swedish localities. Kyrki & Karvonen (op.cit.) suggest the Finnish population might be a recent introduction (by train!). It is difficult to envisage such a hypothesis for the presently described populations. The lepidopterous fauna of Drangedal represent several other hitherto unpublished species, whose distribution patterns with large disjunc-

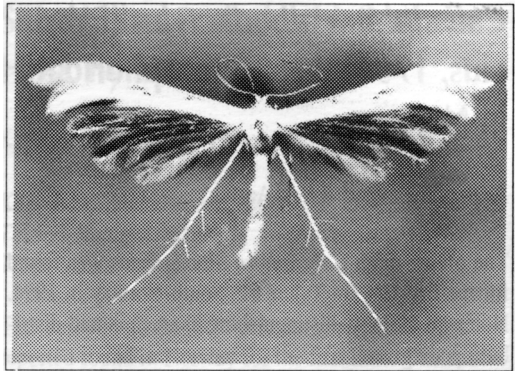


Figure 1
Imago of *Calyciphora albodactylus* (Fabricius).

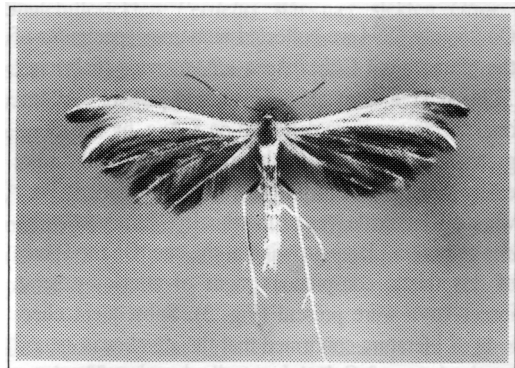


Figure 2
Imago of *Merrifeldia baliodactylus* (Zeller).

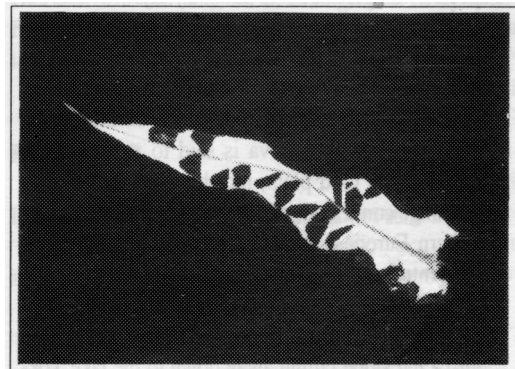


Figure 3
Underside of leaf of *Cirsium helenioides* mined by larvae of *Calyciphora albodactylus*.

tions to other populations, suggest they may be of a relic nature. Examples of such found in the vicinity of the locality described above are virgin forest indicators like the rare *Eudonia laetella* (Zeller, 1846) and the polypore-feeding *Scardia boletella* (Fabricius, 1794). The noctuid *Ipimorpha contusa* (Freyer, 1849) has a breeding population in the nearby Skultrevassåsen Nature Reserve: six specimens were caught in 1993 and 1994, thus confirming the assumption by Søli (1988) based on two records from Porsgrunn that this species is a native of the area. Both *Parnassius apollo* (Linnaeus, 1758) and *Hipparchia alcyone* (Denis & Schiffermüller, 1775) occur in Drangedal.

SAMMENDRAG

Fjærmøllet *Calyciphora albodactylus* (Fabricius, 1794) (Lep., Pterophoridae); ny art for Norge

Fjærmøllet *Calyciphora albodactylus* ble funnet ny for Norge i TEY, Drangedal: Henneseid den 26. juli 1994. Den fløy tallrik på en lokalitet med rikelig forekomst av næringsplanten, hvitbladtistel, *Cirsium helenioides*. Arten ble i 1995 påvist på ytterligere tre nærliggende lokaliteter. Anmerkninger vedrørende biologi, nærstående arter og utbredelse blir gitt.

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Outbreaks of three lepidopteran species in Norway

Tor J. Johansen & Sverre Kobro

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INTRODUCTION

The phytophagous lepidopteran species *Argyresthia retinella* Zeller (Yponomeutidae), *Schreckensteinia festaliella* Hübner (Schreckensteinidae) and *Pygmaena fusca* Thunberg (Geometridae), have the latest years reached injurious population sizes for the first time reported in Norway. The symptoms of injury and the extent of damage to the hosts are briefly described.

Argyresthia retinella Zeller is widely distributed in Norway and has previously been found north to Balsfjord in Troms (TRI) (Leparb, K. Myhr, pers. comm.). The larvae are known to feed in shoots and buds of *Betula* spp. (Agassiz 1987). In 1993, *A. retinella* was identified in material from birch (*Betula pubescens*) with withering buds and shoots in Kåfjord, Troms (TRY), EIS 163. Heavy attacks caused almost complete defoliation of the trees. *A. retinella* has caused similar damage to birch also in other coastal areas in Northern Norway, and is now the subject for studies at The University of Tromsø, Norway and additionally at The Agricultural University of Sweden, Uppsala (O. Tenow, pers. comm.). Damage to birch with unidentified cause, but with symptoms resembling those made by *A. retinella*, has been annually reported by the Agricultural department, Forestry division, in the county of Troms each year since 1989 (H. Chr. Brede, pers. comm.).

Schreckensteinia festaliella Hübner has previously been found north to Alta, Finnmark (FV) (Leparb, L. Aarvik, pers. comm.). The larvae of *Schreckensteinia* spp. are known to feed on *Rubus* spp. (Emmet 1988). In 1994, larvae of *S. festaliella* attacked cloudberry

(*Rubus chamaemorus*) plants in several highly productive smaller bog areas (0.3-1.2 Ha) in Andøya, Nordland (NNV), EIS 152. The leaves were more or less skeletonized from larval feeding, and the cloudberry fruits failed to develop. From distance the plants had a brown appearance (I. Skogstad, pers. comm.). The symptoms resembles the larval damage caused by *Galerucella* sp. (Coleoptera: Chrysomelidae) in 1970-75 in Finland and Northern Norway (Hippa & Koponen 1975, Fjeldaldalen 1991).

Pygmaena fusca Thunberg is common above the timber line all over Norway (Skou 1984). Bilberry (*Vaccinium myrtillus*) and herbs, including *Draba* sp., have been reported as host plants (Nordström and Wahlgren 1941). In 1993, total defoliation of the vegetation by lepidopteran larvae was reported in Nesseby, Finnmark (FV), EIS 177 (G. Vorren, pers. comm.). Bilberry and dwarf birch (*Betula nana*) were noted as defoliated plants. The attack continued in 1994, and this year the pest was identified as *P. fusca*. Females of *P. fusca* are weak flyers, and the migration to new areas is slow. One area which was attacked in 1993, appeared in 1994 as a semicircular spot with a diameter of a few hundred meters. From a distance of several kilometers this was observed as a brown patch. The spot was surrounded by a belt of the present year's attack, in which a high density of larvae, approximately 30-40 per m², was observed (O. Elen and N. Nilsen, pers. comm.).

For all three species, this is the first time mass occurrence and damage are reported from Norway. However, the key factors for population regulation in each case should be revealed before explanatory hypotheses are presented.

SAMMENDRAG

Masseforekomst av tre sommerfuglarter i Norge

Tre sommerfuglarter har hatt masseforekomst i Nord-Norge de siste årene. Artene er vanlig utbredte over det meste av landet, men masseforekomst og skader forårsaket av larvene er ikke rapportert tidligere. *Argyresthia retinella* har ødelagt knopper og skudd hos bjørk flere steder i landsdelen. *Schreckensteinia festaliella* har skjelettet bladene på molte og ødelagt

bæravlingene på avgrensede arealer på Andøya. *Pygmaena fusca*, dvergmåler, har snaugnet vegetasjonen, blant annet blåbær og dvergbjørk, i flere avgrensede områder på Varangerhalvøya.

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